



FY 2020

Integrated Comments and Recommendations

on the MWRA's Proposed
Capital Improvement Program
and
Current Expense Budget

MWRA Advisory Board

**The Community Advisory Board to the
Massachusetts Water Resources Authority**

May 2019

The MWRA Advisory Board...

was established by the State Legislature to represent the 60 communities in the MWRA service area. Through annual comments and recommendations on the Authority's proposed capital and current expense budgets and rates, the Advisory Board provides a ratepayer perspective on the MWRA's plans and policies to improve the region's water and sewer systems.

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Fiscal Year 2020
Capital Improvement Program
and
Current Expense Budget

May 2019

Joseph E. Favaloro
Executive Director

Preface

Pursuant to its responsibility under Sections 8 and 23 of Chapter 372 of the Acts of 1984, the MWRA Advisory Board has undertaken a comprehensive review of the Authority's proposed Current Expense Budget and Capital Improvement Program and Budget for the fiscal year beginning July 1, 2019 (FY 2020). The Advisory Board's review has produced these *INTEGRATED COMMENTS AND RECOMMENDATIONS*, which state the Advisory Board's opinions on a number of issues and policies, plus recommendations on proposed spending in each MWRA department. These *Comments and Recommendations* were approved at the May 16, 2019 meeting of the full Advisory Board.

These *Comments and Recommendations* were prepared by Joseph Favaloro, Travis Ahern, James Guidod, and Lenna Ostrodka of the Advisory Board staff. Overall direction was provided by Vice Chairman for Finance, Bernard Cooper, with the participation of Advisory Board members.

All base information for figures and tables, schematics and photographs contained within the *Comments and Recommendations* document are provided by MWRA or their consultants, unless otherwise noted.

The Advisory Board extends its appreciation to MWRA staff for their assistance in reviewing the FY20 Capital and Current Expense Budgets.

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Introduction

By statute the MWRA Advisory Board is charged with reviewing the Massachusetts Water Resources Authority's proposed Capital Improvement Program (CIP) and proposed Current Expense Budget (CEB). Beginning in 2009, the Advisory Board consolidated its review into one ***Integrated Comments and Recommendations*** document.

The Advisory Board has consistently taken a multi-year approach to the management of rates, believing that stability in rate increases helps our member communities set their own local budgets in a timely and responsible manner, and thus helps their residents, the ratepayers. The role of budget review is especially important to the ratepayers, because the cost to fund the Authority's CIP and CEB falls almost entirely on the shoulders of ratepayers (over 96% of the CEB is paid for by rate revenue, with less than 4% supported by non-rate revenue).

This multi-year approach for the CIP is exemplified by the Advisory Board's approach of putting a "cap" on the Authority's 5-year capital improvement program (FY20 is year 2 of the FY19-23 cap), as capital spending drives the Capital Financing portion of the Authority's budget (i.e. the mortgage payments on capital projects), with Capital Financing representing over 60% of the CEB.

In addition to the CIP Cap, the Advisory Board has also issued a number of "challenges" to the Authority for its annual rate revenue requirement increases with the goal of easing the burden on communities and ratepayers:

- **In FY14, the Advisory Board introduced the mantra: "Four No More"** – meaning no more annual rate revenue requirement increases over 4% ever again for water and sewer assessments to communities;
 - This challenge has been met in all subsequent fiscal years since it was issued by the Advisory Board: (FY14 through FY20, see below)
 - This challenge has not, and will not, expire: the challenge is to never have a rate increase above 4% ever again, however;
- **In FY19, the Advisory Board introduced the new intonation: "2.4 by '24"** – the Advisory Board believes that the Authority's future Capital Financing costs will allow for rate increase projections to go as low as 2.4% by FY24;
 - There are a number of conservative assumptions that go into projecting rate increases out for the next 5-10 years, and things may change that impact these assumptions, but overall, this is a realistic objective for the Authority's budget staff.

The Advisory Board had these challenges in mind when reviewing the **Authority's proposed increase of 3.74% for the FY20 rate revenue requirement**, and through the annual review process, **the Advisory Board has voted to recommend a 3.15% rate increase for FY20** by using various alterations to the proposed CEB (see Appendix C for summary).

In response to past Comments and Recommendations, the Authority has done a yeoman's job in setting a 5-year CIP cap that allows for critical infrastructure needs to be met, without putting undue pressure on ratepayers. In conjunction with this, the Authority has worked hard to reduce Capital Financing costs through refunding and defeasing (i.e. pre-paying) existing debt issuances in the most "difficult" coming fiscal years – those years that pose the greatest challenges in terms of projected rate increases.

The Authority is also in excellent standing with their other long-term liabilities (in addition to debt) such as pension and OPEB. After having achieved "virtual full funding" of the retirement system through overfunding the annual payments prior to setting up and funding its OPEB liability – as proposed and agreed to by the Advisory Board – the Authority is at the "head of the pack" when it comes to public agencies in the Commonwealth. This leaves the Authority to now address other pressing issues.

As we strive for 2.4% by the year FY24, the Advisory Board encourages the Authority to work diligently to tighten their budget-to-actual variances in annual spending, especially wages and salaries where a number of conservative assumptions has often led to higher budgets than necessary. The Advisory Board supports the staffing goals of the Authority (approximately 1,150 employees outside of the Tunnel Redundancy group), but also recognizes the reality that position vacancies will continue to exist each year and should be accounted for in the budget process. Aggressively addressing the need for succession planning in the face of an aging workforce is certainly of utmost importance, however, the CEB should also reflect the reality of how long it takes to hire in today's market.

As we look at the proposed FY20 CIP and CEB, clearly this is one of the least volatile fiscal years in the recent history of the Authority, and that is due in large part to the efforts of the Authority to work with the Advisory Board on finding common ground on previous years' issues. The Advisory Board will continue to fight for every dollar of ratepayer money, and look out on the horizon for coming issues, but we look forward to the continued success that this annual review process has produced.

Proposed FY20 Capital Improvement Program

Proposed FY20 CIP Highlights

- Currently open capital projects total over \$10.9 billion (columns 2 plus 4)
- Over \$4.2 billion has been spent on these projects through FY 2018 (column 2)
- A net total of \$5.8 billion is treated as completed (and closed out) and removed from the open project list (column 1)
- From the inception of the Authority in 1985 through FY 2018 capital spending totals \$8.6 billion (column 3)

Currently Active Projects and MWRA Spending Since 1985

(\$ millions)

Program	Completed (and closed out) Projects	Active Projects Spending through FY18	TOTAL SPENT 1985-2018	MWRA Future Spending	TOTAL (Spent and Future Spending)
Wastewater System Improvements	\$4,040.5	\$2,061.3	\$6,101.8	\$2,601.5	\$8,703.3
Waterworks System Improvements	\$1,689.0	\$649.9	\$2,338.9	\$3,992.7	\$6,331.6
Business & Operations Support	\$31.3	\$101.0	\$132.3	\$78.2	\$210.5
TOTAL MWRA (w/o Contingency)	\$5,770.8	\$4,273.7	\$8,573.0	\$6,672.4	\$15,246.4

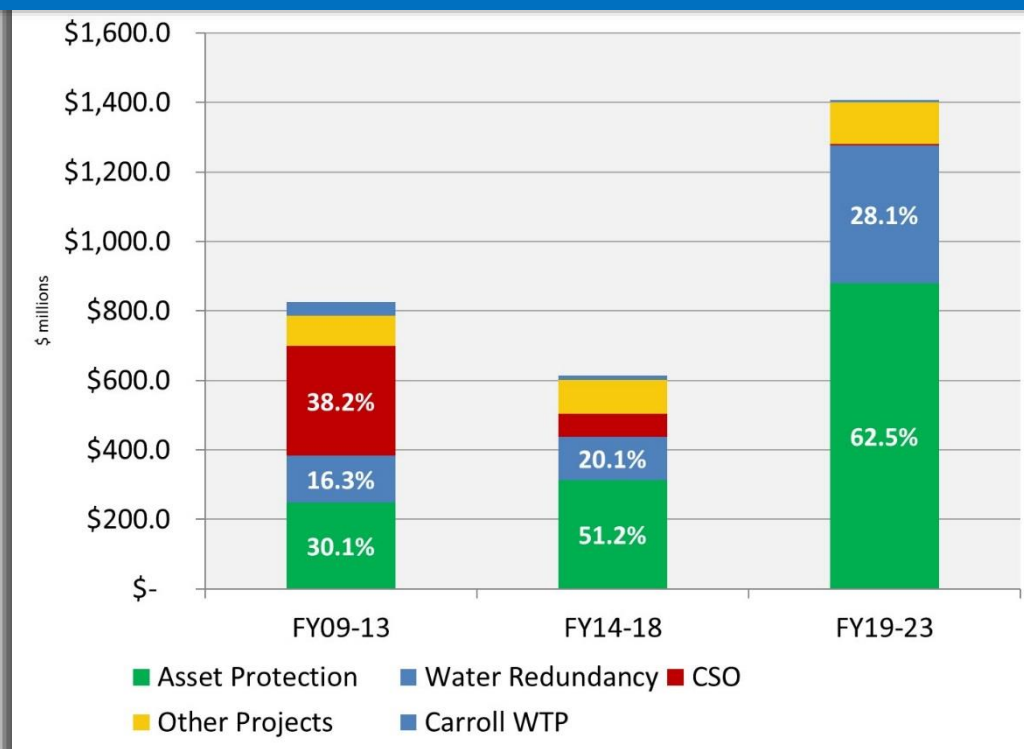
- Future project spending of over \$6.6 billion is proposed (column 4)
- Total spending, both past and future (as identified to date in the proposed CIP) is just over \$15.2 billion (column 5)
- Each year, the Authority includes new projects, as identified in the Master Plan, although not all projects in the Master Plan are in the annual budget document
- The Master Plan, published first in 2006, identified and prioritized \$3.1 billion in water and wastewater projects:
 - FY 2007 – 2018 (12 years): nearly \$2.034 billion in project needs were identified (66% of the total)
 - FY 2019 – 2048 (30 years): \$1.044 billion in future project needs were identified
- The Master Plan was updated in 2018 with a 40-year look at potential capital expenditures through FY58. The updated Plan identifies (approximately):
 - Wastewater needs: \$3.2 billion
 - Waterworks system needs: \$2.6 billion
 - Updated total: \$5.7 billion
 - FY19-23: \$1.007 billion
 - FY24-28: \$2.073 billion

Shift from Mandated Spending to Asset Protection

- Nearly 80% of all spending since 1985 has been for court-mandated projects or major new facilities, including:
 - Deer Island Wastewater Treatment Plant/Boston Harbor Project: \$3.8 billion
 - Residuals facilities at Fore River/Quincy: \$0.18 billion
 - CSO Control Program: \$911 million
 - MetroWest Water Supply Tunnel: \$697 million
 - Carroll Water Treatment Plant: \$423 million

- Going forward, the Authority's focus is on Water and Wastewater Asset Protection and on Water System Redundancy projects
- Asset Protection and Water Redundancy spending nearly triples from the FY14-18 period to FY19-23
- CSO Control Program has reached substantial completion (December 2015)
 - FY19-23 spending: \$7.7 million
 - Spending going forward will be for ongoing monitoring
- Negative spending beyond FY 2020 reflects repayments of the loan portions of the community assistance programs

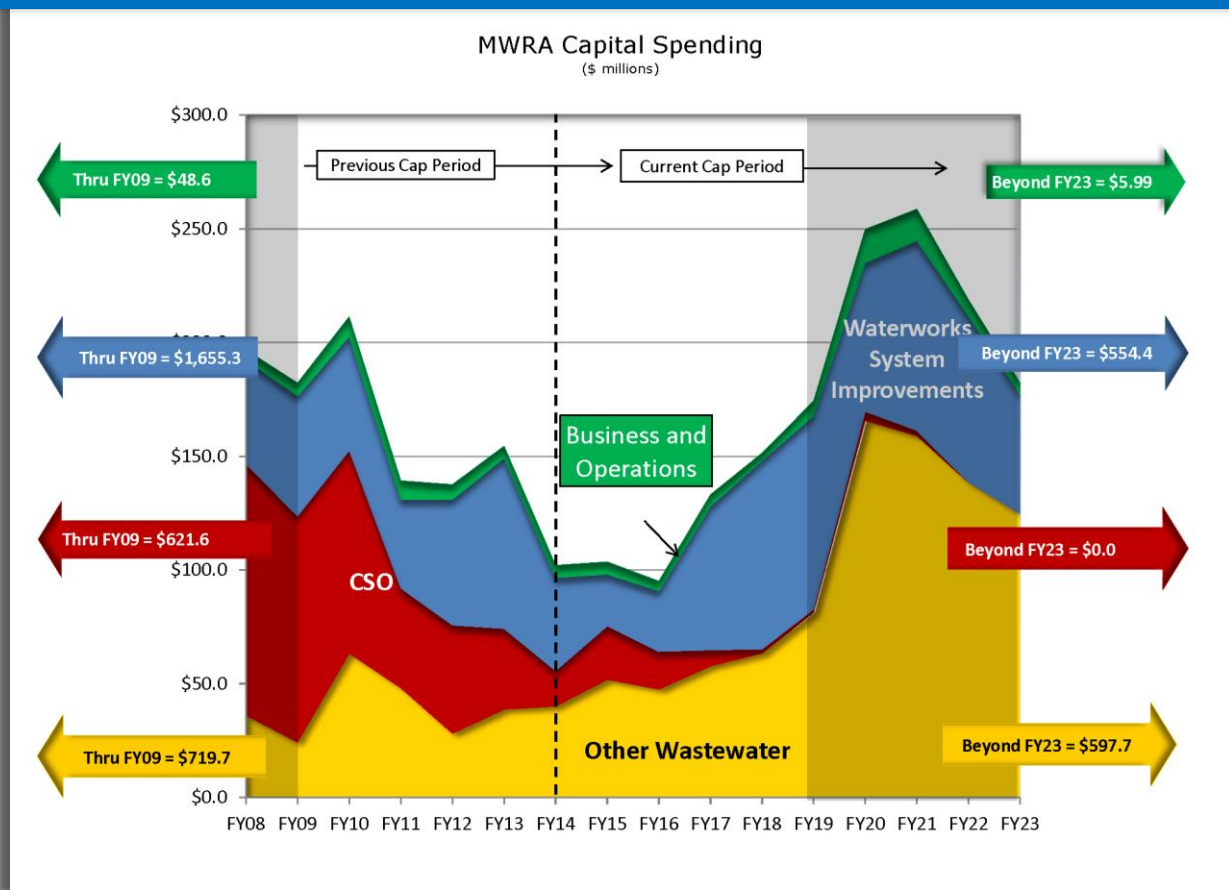
Asset Protection and Water Redundancy Projects Dominate Future Spending



Capital Spending by Initiative ¹				
\$ millions				
	FY09-13	FY14-18	FY19-23	FY24-28
Asset Protection	\$248.0	\$284.6	\$773.4	\$1,095.4
Water Redundancy	\$134.7	\$174.6	\$213.2	\$373.5
CSO	\$315.5	\$64.7	\$7.7	\$0.0
Other Projects	\$88.4	\$61.7	\$89.6	\$109.5
Total	\$825.1	\$585.6	\$1,083.9	\$1,578.4
Asset Protection	30.1%	48.6%	71.4%	69.4%
Water Redundancy	16.3%	29.8%	19.7%	23.7%
CSO	38.2%	11.0%	0.7%	0.0%
Other Projects	10.7%	10.5%	8.3%	6.9%
Total	100.0%	100.0%	100.0%	100.0%

¹ Source: MWRA, Proposed FY20 CIP, page 14

Actual and Proposed Capital Spending FY08 – FY23



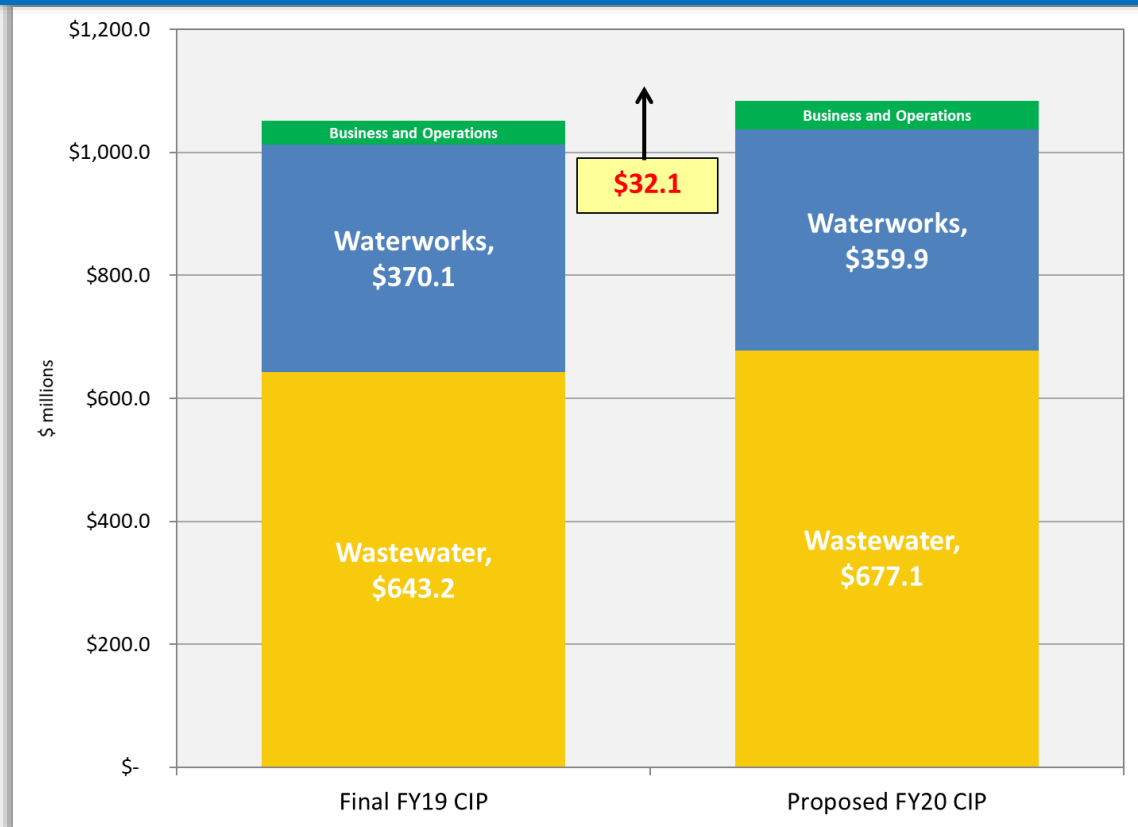
Changes in Proposed Spending

Projected FY19-23 Capital Spending by Program

(\$ millions)

Program	Total Contract	Spending through FY18	Remaining Balance	FY19 Proposed	FY20 Projected	FY21 Projected	FY22 Projected	FY23 Projected	FY19-23
Wastewater System Improvements	\$3,700.6	\$2,061.3	\$1,639.3	\$82.8	\$169.7	\$161.4	\$138.5	\$124.7	\$677.1
Interception & Pumping	1,192.7	602.4	590.3	39.7	65.3	50.0	28.8	19.5	203.3
Treatment	1,037.2	301.2	736.1	12.1	66.4	80.6	80.7	77.3	317.2
Residuals	167.6	65.0	102.6	0.5	8.3	3.5	0.7	1.0	14.0
CSO	910.1	902.4	7.7	1.4	4.0	2.3	0.0	0.0	7.7
Other	392.9	190.3	202.5	29.0	25.7	25.0	28.2	26.9	134.8
Waterworks System Improvements	4,287.7	2,111.4	2,176.3	85.2	65.4	83.5	73.2	52.6	359.9
Drinking Water Quality Improvements	704.6	650.0	54.6	1.8	3.1	3.6	3.4	1.3	13.2
Transmission	2,532.0	825.2	1,706.8	10.5	15.2	40.0	36.8	29.0	131.6
Distribution and Pumping	962.0	464.4	497.6	43.6	31.3	28.2	21.0	16.3	140.3
Other	89.2	171.9	-82.7	29.3	15.8	11.7	12.0	5.8	74.7
Business & Operations Support	163.6	101.0	62.6	6.4	14.7	13.9	7.1	5.0	47.0
TOTAL MWRA w/o CONTINGENCY	\$8,151.9	\$4,273.8	\$3,878.1	\$174.3	\$249.8	\$258.7	\$218.8	\$182.3	\$1,083.9

Changes in FY19 – 23 Proposed Spending



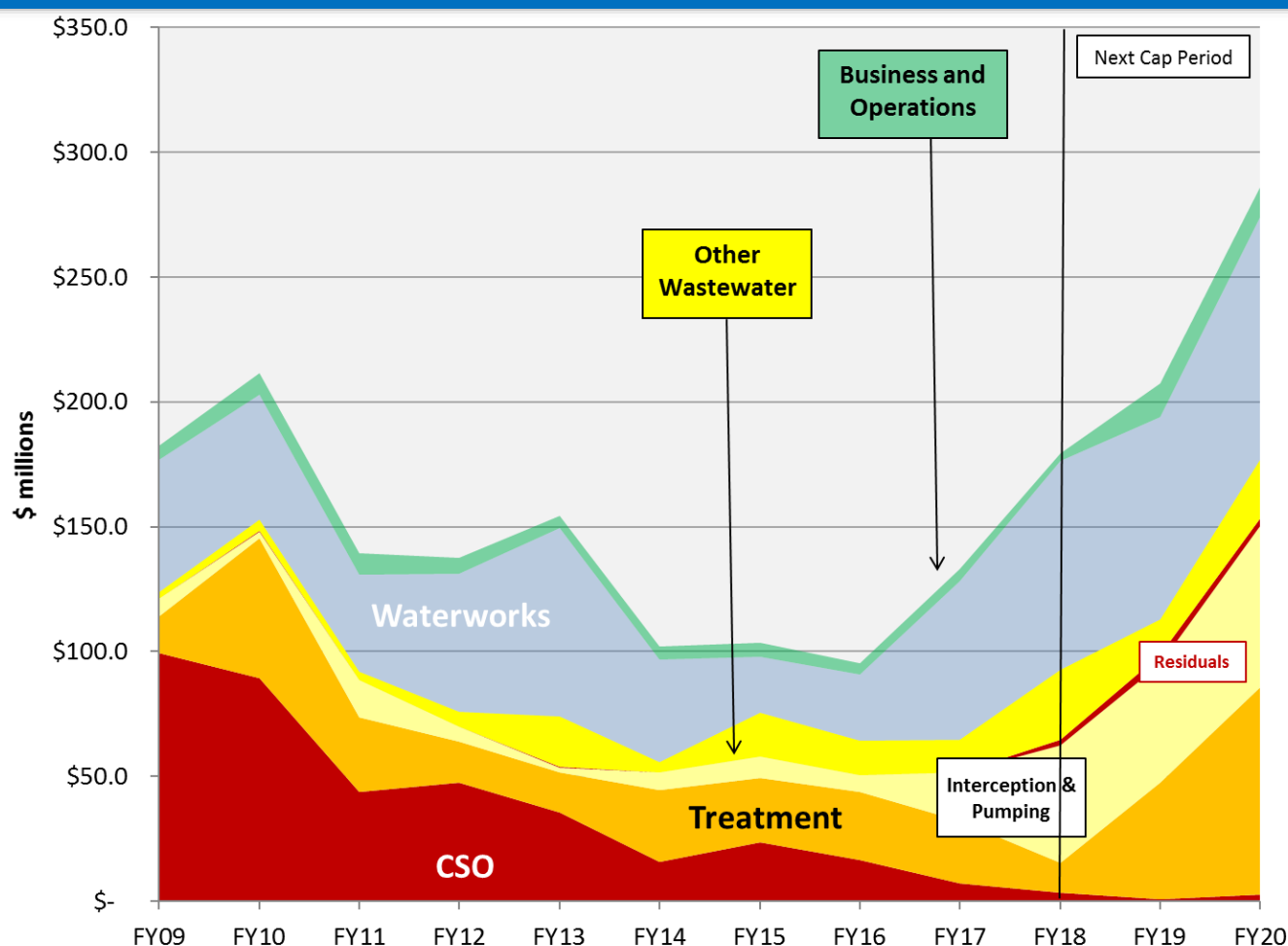
- The proposed FY20 CIP spending for the five-year cap period is revised upward by \$32.1 million from the FY19 final CIP to \$1.084 billion
 - Includes \$134.8 million for I/I grant and loan program and \$37.5 million for LWSAP loans
- FY19-23 wastewater spending as of the proposed FY20 CIP: \$677.1 million
 - Represents 62.4% of total spending for the period
- FY19-23 waterworks spending: \$359.9 million
 - \$10.2 million lower than assumed in the proposed FY19 CIP
 - Represents 33.2% of total spending for the five-year period

Largest 10 Projects FY20 \$ millions				
Utility	Program	Project	FY20 Spending	% of Total CIP FY20 Spending
Wastewater	Treatment	206 DI Treatment PI Asset Protection	\$64.51	25.8%
Wastewater	Interception & Pumping	145 Facility Asset Protection	48.99	19.6%
Wastewater	Other	128 I/I Local Financial Assistance	25.70	10.3%
Waterworks	Distribution & Pumping	727 SEH Redundancy & Storage	12.42	5.0%
Waterworks	Transmission	628 Metro Redundancy Interim Impr	11.28	4.5%
Wastewater	Interception & Pumping	132 Corrosion & Odor Control	10.75	4.3%
Waterworks	Other	765 Local Water Pipeline Imp. Total	9.70	3.9%
Wastewater	Residuals	271 Residuals Asset Protection	8.32	3.3%
Waterworks	Distribution & Pumping	702 New Connection Mains-Shaft 7	7.12	2.9%
Waterworks	Distribution & Pumping	722 NIH Redundancy & Storage	6.62	2.7%
Top 10 Spending in FY20			\$205.4	82.2%
Total MWRA FY20 Spending			\$249.8	100.0%

- The ten largest projects for FY20 account for \$205.4 million or 82.2% of all spending planned for the period
- FY20 proposed CIP spending of \$249.8 million makes up 23% of the \$1.1 billion FY19-23 Cap

Wastewater Capital Spending

Wastewater Capital Spending by Program FY09 – 20



- Wastewater system improvement projects are divided into five categories:
 - Interception and Pumping projects
 - Treatment projects (Deer Island and Clinton wastewater treatment plants)
 - Residuals
 - Combined Sewer Overflow Program projects
 - Other (including the I/I Local Financial Assistance program)

Wastewater Spending Highlights

- FY20 spending on wastewater projects is proposed at \$169.7 million or 68% of all capital spending proposed for the year
- This continues growing wastewater spending among budgeted capital spending, up from 49% in FY18 and 54% in FY19
- Together, wastewater capital spending is expected to be 62% of all spending for the FY19-23 cap period and 54% of all spending for the FY24-28 cap period

Proposed FY20 CIP Largest 10 Wastewater Projects

Utility	Program	Project	FY20 Spending	% of Total Wastewater FY20 Spending
Wastewater	Treatment	206 DI Treatment PI Asset Protection	\$64.51	38.0%
Wastewater	Interception & Pumping	145 Facility Asset Protection	48.99	28.9%
Wastewater	Other	128 I/I Local Financial Assistance	25.70	15.1%
Wastewater	Interception & Pumping	132 Corrosion & Odor Control	10.75	6.3%
Wastewater	Residuals	271 Residuals Asset Protection	8.32	4.9%
Wastewater	Interception & Pumping	142 Wastewater Meter System - Equipment Replace.	4.32	2.5%
Wastewater	CSO Planning & Support	324 CSO Support	2.10	1.2%
Wastewater	CSO Community Managed	341 Dor Bay Separation (Comm Total)	1.88	1.1%
Wastewater	Interception & Pumping	130 Siphon Structure Rehab	0.46	0.3%
Wastewater	Interception & Pumping	104 Braintree-Weymouth Relief	0.42	0.2%
Top 10 Wastewater Spending in FY19				\$167.44
FY19 Wastewater Spending			\$169.70	100.0%

- Ten wastewater projects account for nearly all wastewater spending during FY20; the largest are:
- Deer Island Treatment Plant Asset Protection
- Wastewater Facility Asset Protection
- I/I Local Financial Assistance (net of loan repayments)
- Corrosion and Odor Control
- Residuals Asset Protection

Interception and Pumping (I&P) Projects

- Includes projects that address the wastewater collection system facilities, sewers, and tunnels. Among them are:
 - Four remote headworks facilities
 - Twenty pump stations and CSO facilities
 - More than 250 miles of sewer pipes
 - Four cross harbor tunnels to the Deer Island plant totaling 18 miles

- Proposed FY20 spending: \$65.3 million
- Total projected FY19-23 cap spending: \$88.5 million, \$203.33 in FY19-23 cap
- Facility Asset Protection is the largest group of contracts in the I&P projects category
 - FY19 spending: \$48.9 million
 - This is over 75% of all I&P spending for the fiscal year
 - Total future spending is \$719 million (from FY20 going forward)
 - \$138 million of this amount is scheduled for this cap period (FY19-23)
 - Wastewater Facility Asset Protection has over 70 subphases (contracts)
 - 5 contracts make up 90% of FY20 spending

Largest I&P Facility Asset Protection Contracts \$ millions		
Subphase	FY20 Spending	FY19-23 Spending
Chelsea Creek Upgrades - Construction	\$19.27	\$50.25
Prison Point Rehabilitation - Construction	18.6	36.27
Hayes Point Pump Station Rehabilitation - Construction		6.7
Interceptor Renewal 3 - Construction	4.4	5.6
Ward Street & Columbus Park - Design/CA	.24	4.7
Alewife Brook Pump Station Rehab - Construction		3.7
Chelsea Creek Upgrades - Design/CA	1.4	2.9
Total	\$43.91	\$110.11
% of Facility and Asset Protection Spending	89.6%	79.5%

Chelsea Creek Headworks							
All three remote headworks were built in 1967 and upgraded in 1987. All three facilities operate 24 hours per day.							
Chelsea Creek Headworks is located in Chelsea and has an average daily flow of 135 mgd. It serves 16 north system communities.							
Contracts	Before FY20	FY20	FY21	FY22	FY19-FY23	Beyond FY23	Totals
Chelsea Creek Upgr Design/CA	8,286,494	1,432,470	596,867	0	2,954,937	0	\$11,241,431
Chelsea Creek Upgrades REI	1,777,910	987,027	681,897	0	2,582,240	0	\$4,360,150
Chelsea Hdwk-Carusio PS Utility	32,000	0	0	0	21,144	0	\$53,144
Chelsea Creek Upgr Construction	56,116,228	19,273,913	6,393,733	0	50,253,740	0	\$106,369,968
Totals	\$66,212,632	\$21,693,410	\$7,672,497	\$0	\$55,812,061	\$0	\$122,024,693
Previous Spending Summary		Current Cap Spending Summary			Future Spending Summary		
		Chelsea Creek Upgr Design/CA 64.8% complete.					
		Chelsea Creek Upgrades REI 6.6% complete.					
		Chelsea Creek Upgr Construction 8.8% complete.					

Columbus Park & Ward Street							
Preliminary design report proposes replacements/upgrades to the screens, grit and screening collection and conveyance systems, odor control, HVAC, mechanical, plumbing, instrumentation, PCB removal, electrical systems, and antenna towers.							
Final design and construction contracts for the Columbus Park (in South Boston; 40 mgd) and Ward Street Headworks (upstream of Columbus Park and also located in Boston; 90 mgd) are to follow work on the Chelsea Creek Headworks and will reflect lessons from first project.							
Contracts	Before FY20	FY20	FY21	FY22	FY19-FY23	Beyond FY23	Totals
Columbus Park Headworks Construction	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Columbus Park&Ward St. HVAC Upgrades	0	0	0	0	0	0	\$0
Ward St & Colu Park HWKS Des/CA/REI	0	247,214	1,483,281	1,483,281	4,697,057	6,724,766	\$11,421,823
Ward St & Columbus Park HWKS Const	0	0	0	0	2,093,030	55,465,289	\$57,558,319
Totals	\$0	\$247,214	\$1,483,281	\$1,483,281	\$6,790,087	\$62,190,055	\$68,980,142
Previous Spending Summary		Current Cap Spending Summary			Future Spending Summary		
					Columbus Park and Columbus Park Headworks Construction planned to begin in 2022.		
					Ward St & Colu Park HWKS Des/CA/REI planned to begin in February 20019.		

Cottage Farm							
The Cottage Farm CSO facility was constructed in 1971, and is located next to Magazine Beach on the Cambridge side of the Charles River.							
Contracts	Before FY20	FY20	FY21	FY22	FY19-FY23	Beyond FY23	Totals
CF PCB Abatement Design/CA	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CF Rehab Design/CA/REI	0	0	0	400,000	1,000,000	1,399,166	\$2,399,166
Cottage Farm Construction 1 (PCB)	0	0	0	0	0	0	\$0
Cottage Farm Fuel System Upgrade	497,558	0	0	0	0	0	\$497,558
Cottage Farm Rehab Const	0	0	0	0	0	11,995,826	\$11,995,826
P/P & C/F Washdown Sys Pipe - Design	0	0	0	0	0	0	\$0
PP/CF Engine Pumps Gearbox	6,439,438	0	0	0	0	0	\$6,439,438
Prison PT/CF GB Pump/ESDC	314,767	0	0	0	0	0	\$314,767
Totals	\$7,251,763	\$0	\$0	\$400,000	\$1,000,000	\$13,394,992	\$21,646,755
Previous Spending Summary		Current Cap Spending Summary			Future Spending Summary		
The engine, pumps, and gearbox project is complete.							

Prison Point							
The Prison Point CSO facility was constructed in 1978 and has a maximum capacity of 323 mgd. It is located off Route 28 and Land Boulevard in Cambridge near the museum of Science.							
Contracts	Before FY20	FY20	FY21	FY22	FY19-FY23	Beyond FY23	Totals
P/P & C/F Washdown Sys Pipe - Design	\$0	\$0	\$0	\$0	\$0	\$0	\$0
PP Dry Weather Flow&Strip Pump Improv	0	0	0	0	0	0	\$0
PP/CF Engine Pumps Gearbox	6,439,438	0	0	0	0	0	\$6,439,438
Prison Point Des/CA/RI	1,986,976	523,600	592,659	29,859	1,741,583	0	\$3,728,559
Prison Point HVAC Upgrades - Design	441,387	0	0	0	0	0	\$441,387
Prison Point Piping Rehab	461,919	0	0	0	262,367	0	\$724,286
Prison Point Rehab - Const	0	18,600,000	17,672,169	0	36,272,169	0	\$36,272,169
Prison PT/CF GB Pump/ESDC	314,767	0	0	0	0	0	\$314,767
Totals	\$9,644,487	\$19,123,600	\$18,264,828	\$29,859	\$38,276,119	\$0	\$47,920,606
Previous Spending Summary		Current Cap Spending Summary			Future Spending Summary		
Affected by \$21 million project completed in 2001 which upgraded chlorine disinfection systems, added dechlorination systems, process control and safety improvements at five CSO facilities. The engine, pumps, and gearbox project is complete. \$50,000 facility optimization project completed in 2008 reduced treated CSO discharges into the Upper Inner Harbor.		Prison Point Des/CA/RI 22.9% complete. Prison Point Piping Rehab 43.1% complete.			Prison Point rehabilitation work involves improvement/installations of systems for flood control and energy efficiencies. Security and fire alarm to be included. Prison Point Rehab - Const planned to begin in 2019.		

Alewife Brook Pump Station							
The Alewife Brook Pump Station was built in 1951 in Somerville. Alewife receives wastewater from portions of Arlington, Belmont, Cambridge, Medford, and Somerville; all flow is conveyed to Deer Island for treatment. The project will improve pumping capacity and will incorporate preventative measures for climate change. The rehabilitation will include replacing the three original wet weather pumps, motors, and piping, replacing the influent screens and grinders, updating the HVAC system, upgrading the electrical system, remediating PCB-containing paints, and modifying the building interior to meet current building codes, energy efficiency improvements, flood protection measures, and security improvements.							
Contracts	Before FY20	FY20	FY21	FY22	FY19-FY23	Beyond FY23	Totals
Alewife Brook PS Final Des/CA/REI	\$2,159,852	\$9,800	\$0	\$0	\$534,752	\$0	\$2,694,604
Alewife Brook Pump Stn Rehab - Const.	13,451,448	0	0	0	3,678,171	0	\$17,129,619
Alewife Brook Pump Stn Rehab - Des/CA	223,194	0	0	0	0	0	\$223,194
Alewife Brook Pump Stn Screens-Const	0	0	0	0	0	0	\$0
Totals	\$15,834,494	\$9,800	\$0	\$0	\$4,212,923	\$0	\$20,047,417
Previous Spending Summary		Current Cap Spending Summary			Future Spending Summary		
Alewife Brook Pump Stn Rehab - Des/CA 100% complete.		Alewife Brook PS Final Des/CA/REI 67.0% complete. Alewife Brook Pump Stn Rehab - Const. 27.6% complete.			No projected spending on the project after FY20.		

Wastewater Treatment

- Deer Island Treatment Plant Asset Protection
- Clinton Wastewater Treatment Plant
- Laboratory Instrumentation (see Equipment Purchase project under Business and Operations Support)

Deer Island Wastewater Treatment Plant

- Deer Island Asset Protection is the largest capital project in FY20 and the FY19-23 cap period, but is actually made up of several large “sub-projects,” the largest of which are shown in tables below
- Spending in FY20 is budgeted at \$65.5 million or 21.6% of all capital spending
- Total project costs increased by \$15 million in the proposed FY20 budget (as compared to the final FY19 budget), from \$961.24 million to \$975.8

Top Deer Island Projects by Period (\$ millions)		
FY19-23		
Suphase	\$	
HVAC Equipment Replacement - Const	\$	40.20
Gravity Thickener Rehab	\$	19.23
MCC & Switchgr Replace Const	\$	10.59
WTF VFD Replacement - Construction	\$	8.34
Chem Tk & Digestr Pipe	\$	8.00
Eastern Seawall Construction - 1	\$	4.50
Clarifier Rehab Phase 2 - REI	\$	3.00
As-Needed REI-1	\$	3.00
As-Needed Des 9-1	\$	2.80
As-Needed Des 9-2	\$	2.80
All (33) other contracts	\$	203.99
TOTAL	\$ 306.44	
33.4% of total spending		
FY24-28		
Suphase	\$	
Combined Heat & Power - Constructor	\$	83.00
Odor Control Rehab - Construction	\$	30.97
Elect Equip Upgrade 5 Const	\$	23.16
DI Centrifuge Replacements - Construc	\$	16.64
DI Switchgear Replacement - Construct	\$	16.00
Cryogenics Plant Equip Replace - Const	\$	15.00
DI CTG Rebuilds	\$	8.00
Barge Berth Rehab Const	\$	6.81
NMPS VFD Replace Const	\$	6.77
Co-Digestion Design/Build	\$	5.00
All (31) other contracts	\$	154.63
TOTAL	\$ 365.99	
57.8% of total spending		

Electrical Equipment Upgrade

This phased program, to replace bus ducts and substation components, has been ongoing since 2001, with future spending estimates included into the mid 2020's.

Contracts	Before FY20	FY20	FY21	FY22	FY19-FY23	Beyond 23	Totals
Electrical Equipment Upgrade-Const 2	\$1,913,183	\$0	\$0	\$0	\$0	\$0	\$1,913,183
Electrical Equipment Upgrade 3 - REI	1,111,984	0	0	0	0	0	\$1,111,984
Electrical Equipment Upgrade-Const. 3	15,173,750	0	0	0	0	0	\$15,173,750
Electr Equip Upgr 4 REI	858,375	0	0	0	0	0	\$858,375
Electrical Equipment Upgrade-Const 4	7,871,148	0	0	0	0	0	\$7,871,148
Electrical Equipment Upgrade Phase 5	0	0	0	0	0	23,161,875	\$23,161,875
Totals	\$26,928,440	\$0	\$0	\$0	\$0	\$23,161,875	\$50,090,315

Previous Spending Summary	Current Cap Spending Summary	Future Spending Summary
Many substations and individual components distribute power to all of the facilities on Deer Island. The components include transformers, load break switches, bus ducts, cables, conduit, motor control centers, and protective relaying systems. Four upgrade contracts have been approved over the last 15 years. Electrical Equipment Upgrade Phase 4 (a 3-year contract), is now completed.		Phase 5 construction is not budgeted to begin until the FY24-28 cap period. The scope will reflect lessons learned from the previous contracts.

Combined Heat & Power

The project is to optimize the use of methane gas produced from the existing sludge processing system. A new combined heat and power facility would combine gas-fired turbines, and would increase electrical production and self-generation.

Contracts	Before FY20	FY20	FY21	FY22	FY19-FY23	Beyond 23	Totals
Combined Heat & Power Design	\$220,000	\$880,000	\$0	\$0	\$1,100,000	\$0	\$1,320,000
Combined Heat & Power Constr	0	0	0	0	0	83,000,000	\$83,000,000
Totals	\$220,000	\$880,000	\$0	\$0	\$1,100,000	\$83,000,000	\$84,320,000

Previous Spending Summary	Current Cap Spending Summary	Future Spending Summary
	Design work is scheduled to begin June 2020; scope is being reviewed and can be expected to be extended.	Construction is scheduled to begin December 2022. Schedule may be extended to reflect revised time frame for feasibility study and preliminary and final design work.

HVAC Equipment Replacement

The project will involve replacement of two obsolete HVAC control systems with one manufacturer's system, reducing replacement parts and improving automation. Includes replacement of fume hoods in the laboratory.

Contracts	Before FY20	FY20	FY21	FY22	FY19-FY23	Beyond FY23	Totals
HVAC Equipment Replacement - Const.	\$0	\$8,040,940	\$10,855,269	\$13,267,551	\$40,204,700	\$0	\$40,204,700
HVAC Equipment Replacement - Des/ESDC	1,391,120	151,298	181,557	181,557	607,160	15,130	\$2,013,410
Totals	\$1,391,120	\$8,192,238	\$11,036,826	\$13,449,108	\$40,811,860	\$15,130	\$42,218,110

Previous Spending Summary	Current Cap Spending Summary	Future Spending Summary
Design contract was awarded in the spring 2014.	HVAC Equipment Replacement - Des/ESDC is 64.4% completed. Planned end October 2020.	Construction contract is currently scheduled for March 2018; maybe extended. Construction costs continue to be updated and increased.

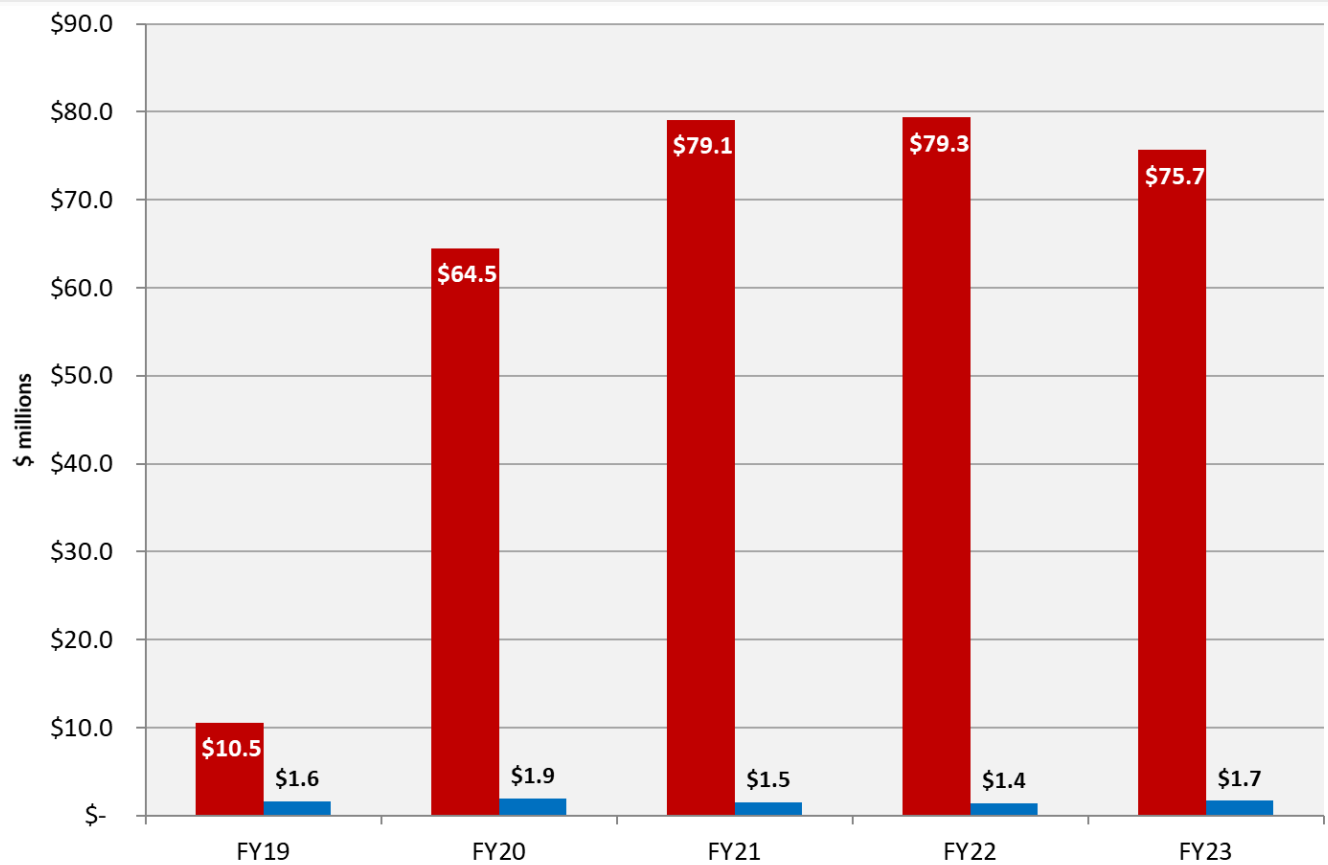
Fire Alarm System Replacement

The project includes the replacement of the existing fire alarm system at Deer Island; including the front end, graphical panels, and all field devices. It may also include the replacement of the existing fiber optic data highway, based on an assessment to be conducted by the design consultant. It is one of the largest fire alarm systems in New England.

Contracts	Before FY20	FY20	FY21	FY22	FY19-FY23	Beyond FY23	Totals
Fire Alarm System Replacement-Design	\$747,135	\$151,161	\$362,785	\$362,786	\$1,299,618	\$60,464	\$2,107,217
Fire Systm Repl REI	0	237,666	570,400	570,400	1,948,866	190,134	\$2,139,000
Fire Alarm System Replacement - Const	0	2,619,047	4,285,714	4,285,714	15,476,190	6,523,810	\$22,000,000
Totals	\$747,135	\$3,007,874	\$5,218,899	\$5,218,900	\$18,724,674	\$6,774,408	\$26,246,217

Previous Spending Summary	Current Cap Spending Summary	Future Spending Summary
The Board awarded a design contract in October 2015 which includes preliminary design, final design, and engineering services during construction.	Fire Alarm System Replacement-Design is 26.3% completed.	The construction contract is budgeted to run from September 2018 to September 2022; the system is estimated for replacement every 20 years.

Deer Island Treatment Plant versus Clinton Treatment Plant Spending FY19-23



Clinton Wastewater Treatment Plant

- Spending during FY20: \$1.90 million
- Spending from FY19-23: \$8.0 million
 - Phosphorus removal construction FY19-23 spending: \$1.2 million
- Spending from FY24-28: \$4.6 million

Clinton Wastewater Treatment Plant (\$ millions)			
Projects	FY 09-13	FY14-18	FY19-23
Clinton Soda Ash Replacement	\$ 0.15		
Clinton Plant-Wide Concrete Repair	\$ 0.06		
Clinton Digester Cleaning and Rehab	\$ 0.09	\$3.35	
Clinton Aeration Efficiency Improvement	\$ 1.88	(\$0.01)	
Clinton WWTP Influent Gates			
Clinton WWTP Auxillary Pumps			
Clinton WWTP Rehab Des/ESDC/RE			0.5
Valves and Screw Pumps Replacement			2.5
Phosphorus Removal - Design		\$1.58	\$0.22
Phosphorus Removal - Construction		\$1.42	\$0.94
Clinton Roof Rehab			\$0.67
National Grid Gas Line		\$0.49	
Screw Pump Replacement - Phase 2 Construction			\$2.30
Digester Cover Replacement			\$0.60
Equipment Storage Building			\$0.29
TOTAL	\$ 2.18	\$6.83	\$8.02

Residuals

- Total future spending is proposed at \$56.9 million²
- Condition assessment/technology and regulatory review have been conducted
 - Results may point to need for additional feasibility studies on possible process change
- Spending during FY20 is budgeted at \$8.3 million
- Total budgeted costs are unchanged from the final FY19 CIP, at \$103 million

Combined Sewer Overflow Control Program

- Substantial completion on the multi-year CSO Control Program was reached by the court-ordered date of December 2015. All of the 35 projects are complete
- The Authority has been constructing the projects in the Long-Term Control Plan for over 20 years, since 1996, according to the December Court Report
- The CSO Control Program has included the management of 125 contracts, including 82 construction contracts, 33 engineering contracts and 10 planning and technical support contracts, as well as 6 community financial assistance agreements. To date, MWRA has spent \$893.5 million on the CSO control efforts, or 98% of the \$909.5 million budget, on the 35 CSO projects

² FY20 and beyond

- Region-wide CSO discharge volume in a typical rainfall year has been reduced from 3.3 billion gallons to 0.4 billion gallons, an 88% reduction, with at least 93% of the remaining CSO volume treated at MWRA's four remaining CSO facilities
- Total project costs: \$910.1 million
 - No change from FY19 CIP
- Much lower levels of spending will continue through FY 2021, when MWRA is to complete a sewer system performance assessment verifying attainment of the goals for long-term CSO control levels
- Cash flows and spending schedules are tied to dates established in the Court Order
- MWRA has five years following construction of the last CSO project in 2015 to complete, by December 2020, post-construction monitoring and a performance assessment to verify the approved long-term levels of CSO are achieved
- As part of the agreement, DEP agreed to continue to reissue, and EPA agreed to approve, the Charles River and Alewife Brook/Upper Mystic River CSO variances through 2020 without additional CSO controls beyond the approved plan

Remaining CSO Spending

	Proposed FY20 CIP	Spent/Transferred thru Dec 2018	Remaining Spending	Remaining Spending Activity
MWRA	\$433.5	433.5	0	3-year CSO performance assessment thru December 2020; Somerville Agreement
City of Cambridge	105.6	104.4	1.3	CAM004 surface restorations thru Dec 2017
BWSC	293	289.2	3.7	Dorchester inflow removal
Town of Brookline	24.7	24.7	0	
TOTAL	\$856.8	\$851.8	\$5.0	

CSO Spending (\$ millions)			
Project	FY09-13	FY14-18	Beyond FY19
North Dorchester Bay	\$82.58	(\$0.11)	
East Boston Branch Sewer Relief	\$74.94	(\$0.01)	
MWR003 Gate & Siphon	\$0.65	\$0.24	
Dorchester Bay Sewer Separation (Fox Point)	\$0.39	\$0.47	
Dorchester Bay Sewer Separation (Commercial Point)	\$6.26	\$0.73	\$3.76
Stony Brook Sewer Separation	(\$0.86)	\$0.05	
Union Park Detention Treatment	(\$0.27)	\$0.00	
Cambridge Sewer Separation	\$32.03	\$53.96	
Cambridge Floatables	\$0.16	\$0.40	
Fort Point Channel Sewer Separation	\$3.72	(\$0.90)	
Morrissey Boulevard Drain	\$17.67	(\$0.16)	
Reserved Channel Sewer Separation	\$57.32	\$10.57	
Brookline Sewer Separation	\$24.73	(\$1.28)	
Bulfinch Triangle Sewer Separation	\$9.36	(\$0.80)	
Charles River CSO	\$2.53	\$0.00	
CSO Support	\$4.28	\$0.46	\$1.82
TOTAL	\$315.49	\$63.62	\$5.58

Other Wastewater Projects

Infiltration/ Inflow Local Financial Assistance Program

- Includes one major project/program: Infiltration/Inflow Local Financial Assistance Program
- Total budget: \$392 million
- FY20 net budget: \$25.6 million
- Net budget for FY19-23: \$134.8 million
 - Phase 1 and 2: 25% grants/75% loans
 - Phases 3 through Phase 8: 45% grants/55% loans
 - Total each phase: \$40 million
 - Repayment period: five years
 - Phases 9 and 10: 75% grants/25% interest free loans
 - Total each phase: \$80 million
 - Repayment period: ten years
 - Phases 11 and 12: 75% grants/25% interest free loans
 - Total each phase: \$60 million
 - Repayment period: ten years

Policy Point

Wiggins Pump Station

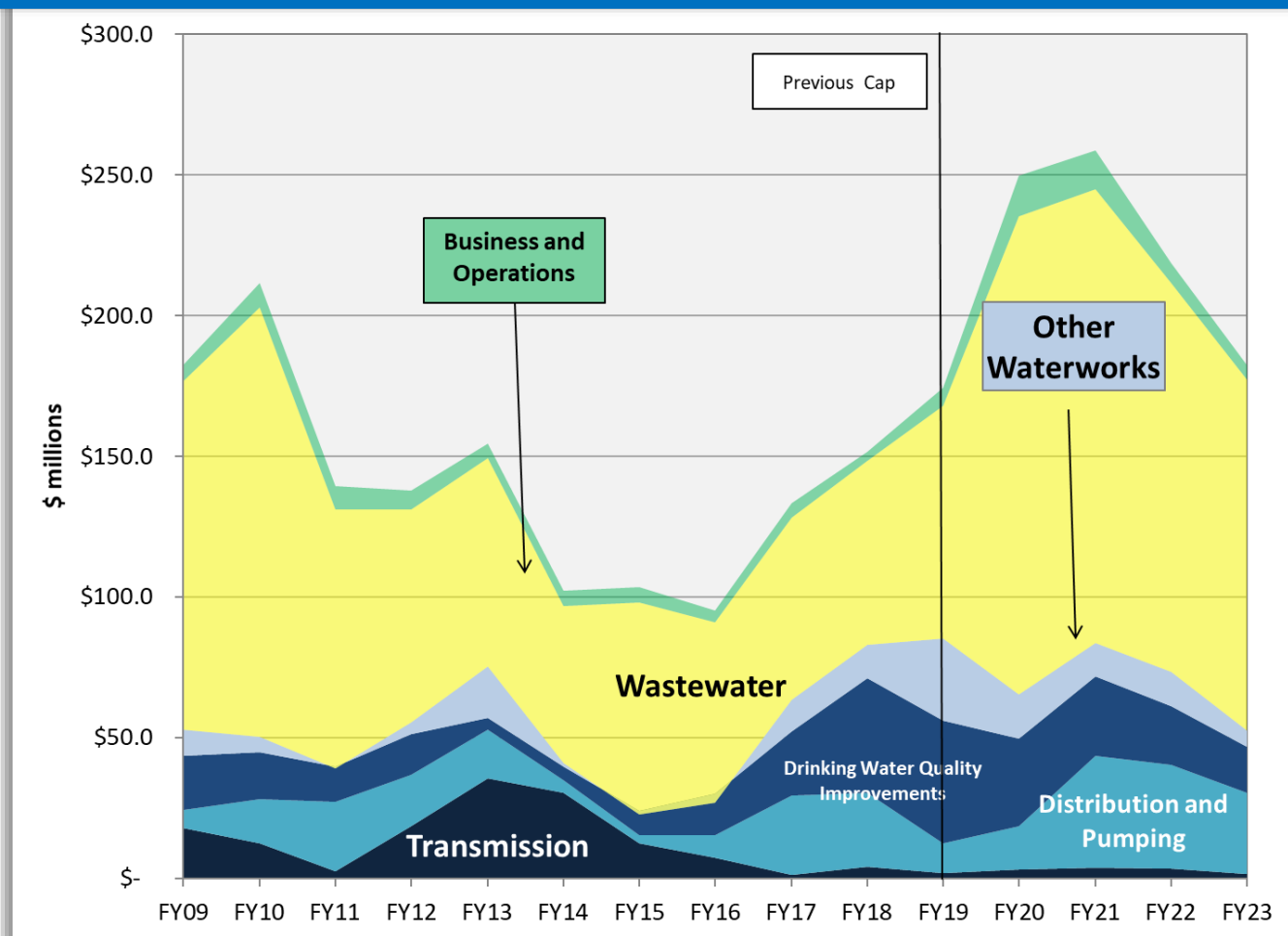
“Good Business is Good Business”

In June 2018, the MWRA Board of Directors approved the FY19-23 Capital Improvement Program spending cap, accepting the Advisory Board recommendation to lower spending for the period to below \$1 billion. During the budget review process the Advisory Board analyzed historic CIP spending and the proposed project schedule to determine that the proposed \$1.2 billion spending cap was aiming too high. The Authority robustly plans and completes capital projects but over scheduling them can appear as shortcomings and underspending.

With the new five-year cap in place, the Advisory Board was expecting only a light review of the CIP in FY20. Staff were not expecting to offer any heavy changes to the CIP until the Authority began preparing for the rehabilitation of the Wiggins Pump Station, which serves Massport’s Conley Terminal. Staff identified that the pump station served fellow quasi-state agency, Massport, with no charge since the inception of the MWRA. Staff have since explored ways to fairly assess the costs of managing the pump station. In [the policy section of this document](#), the Advisory Board recommends new approaches to this project that are mindful of fair business practices and civil relations between quasi-state agencies.

Waterworks Capital Spending

Waterworks Capital Spending by Program FY09 – 23



- There are four main categories of Waterworks spending
 1. Drinking Water Quality Improvements
 2. Transmission
 3. Distribution and Pumping
 4. Other projects
- FY14-18 spending: \$236.7 million
- Proposed FY19-23 spending: \$359.9 million
- Proposed Beyond FY23 spending: \$1.8 billion
 - Includes \$1.4 billion for Metro Tunnel Redundancy (see Transmission below) and \$101.6 million for Metro Redundancy Interim Improvement projects for a total of \$1.5 billion
- Proposed FY20 spending: \$65.4 million
- Ten projects make up nearly all Waterworks spending for FY20

Largest 10 Waterworks Projects

FY20

\$ millions

Utility	Program	Project	FY20 Spending	% of Total Waterworks FY20 Spending
Waterworks	Distribution And Pumping	727 SEH Redundancy & Storage	12.42	19.0%
Waterworks	Transmission	628 Metro Redundancy Interim Improvements	11.28	17.2%
Waterworks	Other	765 Local Water System Assistance Program	9.70	14.8%
Waterworks	Distribution And Pumping	702 New Connect Mains-Shaft 7	7.12	10.9%
Waterworks	Distribution And Pumping	722 NIH Redundancy & Storage	6.62	10.1%
Waterworks	Other	766 Waterworks Facility Asset Protection	4.88	7.5%
Waterworks	Drinking Water Quality Improve	542 Carroll Water Treatment Plant	2.08	3.2%
Waterworks	Distribution And Pumping	693 NHS - Revere & Malden Pipe	2.06	3.2%
Waterworks	Distribution And Pumping	723 Nor Low Service Rehab Sec8	1.64	2.5%
Waterworks	Transmission	625 Metro Tunnel Redundancy Total	1.51	2.3%

Top 10 Waterworks Spending in FY20	\$59.3	90.64%
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FY20 Waterworks Spending	\$65.4	100.00%
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Drinking Water Quality Improvements

- FY14-18 spending: \$54.8 million
- Proposed FY19-23 spending: \$13.2 million
- Proposed FY20 spending: \$3.1 million (up from \$1.8 million in FY19)
- John J. Carroll Treatment Plant (CWTP) and related contracts
 - FY14-18 spending: \$11.8 million
 - Proposed FY19-23 spending: \$3.8 million
 - Proposed FY20 spending: \$2.1 million
 - Planned FY24-28 spending: \$9.3 million

Transmission

- The water transmission system consists of more than 100 miles of tunnels and aqueducts that transport water daily by gravity from the supply reservoirs to points of distribution within the service area.
- FY14-18 spending: \$70.2 million
- Proposed FY19-23 spending: \$131.7 million
- Proposed FY20 spending: \$15.2 million
- Largest projects during FY20 include:
 - Metropolitan Redundancy Interim Improvements: \$11.3 million
 - Metropolitan Tunnel Redundancy: \$1.5 million (see below)
 - Watershed Land: \$0.9 million
 - Cosgrove Tunnel Redundancy: \$0.5 million (down from \$5.2 million in FY19)

Policy Point

Metropolitan Tunnel Redundancy

"Funding the Project"

In January 2017, the MWRA Board of Directors voted to approve the deep rock tunnel option for water redundancy in the Boston metropolitan area. This followed a thorough discussion by MWRA staff on redundancy options at the October 2016 Board meeting, as well as an Advisory Board MuniWorks conference in December 2016 to garner stakeholder input.

The first year of this project, after Board approval, was highlighted by the hiring of Kathleen Murtagh as Director of Metropolitan Tunnel Redundancy. The project team now has multiple staff members and has awarded its first major contract for Program Support Services to JCK Underground for \$10.3 million.

With \$103.5 million in planned spending during the current FY19-23 CIP spending cap for the Metro Tunnel Redundancy and Metro Redundancy Interim Improvements, and \$1.5 billion in planned spending beyond FY23, the Advisory Board remains very interested in how this project will be funded, specifically, what funding sources are available outside of MWRA ratepayers.

With recent discussions focused on a \$2 trillion federal infrastructure bill, the Advisory Board expects that the Authority will be prepared to solicit any available new federal infrastructure funding for Metropolitan Tunnel Redundancy.

Distribution and Pumping

- Includes projects that focus on the metropolitan system, which is divided into seven pressure zones and includes:
 - 284 miles of distribution pipeline east of Shaft 5
 - 11 storage tanks
 - 11 pump stations
 - 9 tunnel shafts
 - approximately 4,700 valves
- FY14-18 spending: \$91.7 million
- Proposed FY19-23 spending: \$140.3 million
- Proposed FY20 spending: \$31.3 million
- Largest projects in FY20:
 - Southern Extra High Redundancy and Storage: \$12.4 million
 - New Connecting Mains (Shaft 7 to WASM 3): \$7.1 million
 - Northern Intermediate High Redundancy and Storage: \$6.6 million
 - Peabody Pipeline Project: was budgeted at \$2.2 million in FY19; removed from CIP in FY20: no longer feasible based on Peabody's decision to rebuild aging water plant

Other Waterworks Projects

- FY14-18 net spending: \$20.2 million
- Proposed FY19-23 spending: \$74.7 million
- Proposed FY20 spending: \$15.8 million
- FY20 spending includes:
 - Local Water Pipeline Assistance Program: \$9.7 million
 - Phase 3 Distributions: +\$12.0 million
 - Phase 3 Loan Repayments: **-\$1.8 million**
 - Waterworks Facility Asset Protection: \$4.9 million

Business and Operations Spending

- FY20 Business and Operations spending: \$14.7 million

Largest Business & Ops Projects FY20 (\$ millions)	
Project	FY20 Spending
IT Infrastructure Program	\$6.0
Capital Maintenance Planning & Development	3.4
Equipment Purchase	1.7
Application Improv Program	1.7
TOTAL	\$12.9

- FY14-18 Business and Operations spending: \$23.6 million
- FY19-23 Business and Operations spending: \$47.0 million
 - FY19-23 cap proposed spending almost double the FY14-18 spending
- MIS-related FY20 net proposed spending: \$9.0 million
 - Application Improvement Program: \$1.7 million
 - FY14-18 spending: \$2.9 million
 - Proposed FY19-23 spending: \$5.1 million
 - To improve efficiencies of business processes associated with managing operations and support divisions
 - Information Security Program: \$1.1 million
 - FY14-18 spending: \$1.1 million
 - Proposed FY19-23 spending: \$3.8 million
 - To increase resiliency and sustainability of data security practices
 - Information Technology Management: \$200 thousand
 - FY14-18 spending: \$0
 - Proposed FY19-23 spending: \$200 thousand
 - To improve oversight process for procurement of IT solutions throughout the Authority
 - IT Infrastructure Program: \$6.0 million
 - FY14-18 spending: \$4.5 million
 - Proposed FY19-23 spending: \$10.3 million
 - To implement consolidated and optimized versions of equipment and databases

- Alternative Energy Initiatives: \$0
 - FY14-18 spending: \$876 thousand
 - Proposed FY19-23 spending: \$0
 - Planned FY24-28 spending: \$5.2 million
 - One remaining subphase – Future Deer Island Wind at Battery D Location – has been rescheduled to FY 2024
- Capital Maintenance Planning and Development: \$3.4 million
 - FY14-18 spending: \$4.3 million
 - FY19-23 spending: \$14.0 million
 - Includes four as-needed design contracts and two as-needed Construction Services/Resident Engineering Inspection Services contracts
- Capital Equipment purchases: \$1.7 million
 - FY14-18 spending: \$9.7 million
 - Vehicle Purchases: \$6.7 million
 - Major Lab Instrumentation: \$574.5 million
 - FY19-23 spending: \$10.1 million
 - Vehicle Purchases: \$5.4 million
 - Major Lab Instrumentation: \$1 million
- Technical Assistance Contract: \$366.0 thousand
 - FY14-18 spending: \$0
 - FY19-23 spending: \$1.1 million
 - Supports such services as land appraisal, surveying, and hazardous materials assessment
- MWRA Facilities Management and Planning: \$300 thousand
 - FY14-18 spending: \$0
 - FY19-23 spending: \$2.5 million
 - Project consolidated existing MWRA projects (DI Maintenance Facilities and DI CSB Demolition) to provide a central point of review and decision making for space planning decisions across the organization

Capital Spending Cap

Background for Setting a Five-Year Cap on Capital Spending, a Recap of the Cap

- The Authority first adopted a capital spending cap in 2001, setting a ten-year cap each year as part of the approval of the final CIP and annual caps for the first three years of the budget period. In each succeeding year, a new ten-year cap was calculated by removing the completed year, adding any unspent funds from the just completed year and adding a new tenth year in the amount of \$100 million³.
- In June 2003, the Board of Directors adopted a revised capital spending cap policy with a calculation that reflected projected expenditures for a five-year period, plus contingency allowances and inflation adjustments⁴, less Chicopee Valley Aqueduct projects.
- A second provision of the cap allows annual spending within the five-year period to vary within plus or minus 20% of the initial amounts calculated for each of the five years, as long as the five-year total is not exceeded. In the event that an annual cap limit is exceeded, the Authority may request approval by the Board of Directors to exceed the limit for an individual fiscal year.

The First Five-Year Cap: FY04-08

- Approved in June 2003 as part of the approval of the final FY04 CIP
- Baseline FY04-08 capital spending cap: \$1.1345 billion. (See Appendix E)
 - Based on projected capital spending of \$1.0233 billion
- Actual spending: \$888.5 million
- The Authority did not exceed the overall five-year cap or the allowance of 20% over the individual base year caps.

The Second Five-Year Cap: FY09-13

- Approved in June 2008 as part of the approval process for the final FY09 CIP (See Appendix E)
- Baseline FY09-13 capital spending cap: \$1.1438 billion
 - Based on projected capital spending of: \$1.0814 billion
- Actual spending: \$825.1 million
 - Lower than the first cap period

The Third Five-Year Cap: FY14-18

- During the review of the proposed FY13 CIP, the Advisory Board, noting the lower than budgeted spending of the first two periods and observing the progress toward completing the court-ordered CSO Control Program, challenged the Authority to limit the FY14-18 cap to no more than \$800 million
- The Authority reshaped its proposed capital program and reconsidered the scheduling for a number of projects, and recommended a new five-year cap below the \$800 million challenge
- The FY14-18 baseline cap was approved in June 2013 as part of the approval process for the final FY14 CIP
- Baseline FY14-18 capital spending cap: \$791.7 million
 - Based on projected capital spending of: \$718.0 million
- Actual spending: \$543.9 million
 - 21.9% less than the baseline cap

³ Adjusted for inflation.

⁴ On unawarded construction contracts.

- After accounting for programs like I/I, Community Water Loans, and Community CSO, which are not directly under MWRA control, spending cap variance reduced to \$90.7 million.

The Fourth Five-Year Cap: FY19-23

- During the review of the proposed FY19 CIP, the Advisory Board, challenged the Authority to bring its proposed five-year cap of \$1.2 billion to no greater than \$950 million
- The Authority reshaped its proposed capital program and reconsidered the scheduling for a number of projects, and recommended a new five-year cap at \$985 million
- The FY19-23 baseline cap was approved in June 2018 as part of the approval process for the final FY19 CIP
- Baseline FY14-18 capital spending cap: \$896.2 million
- Proposed FY19 spending \$179.2 million

Projected spending (in proposed FY20 budget) \$174.3 million

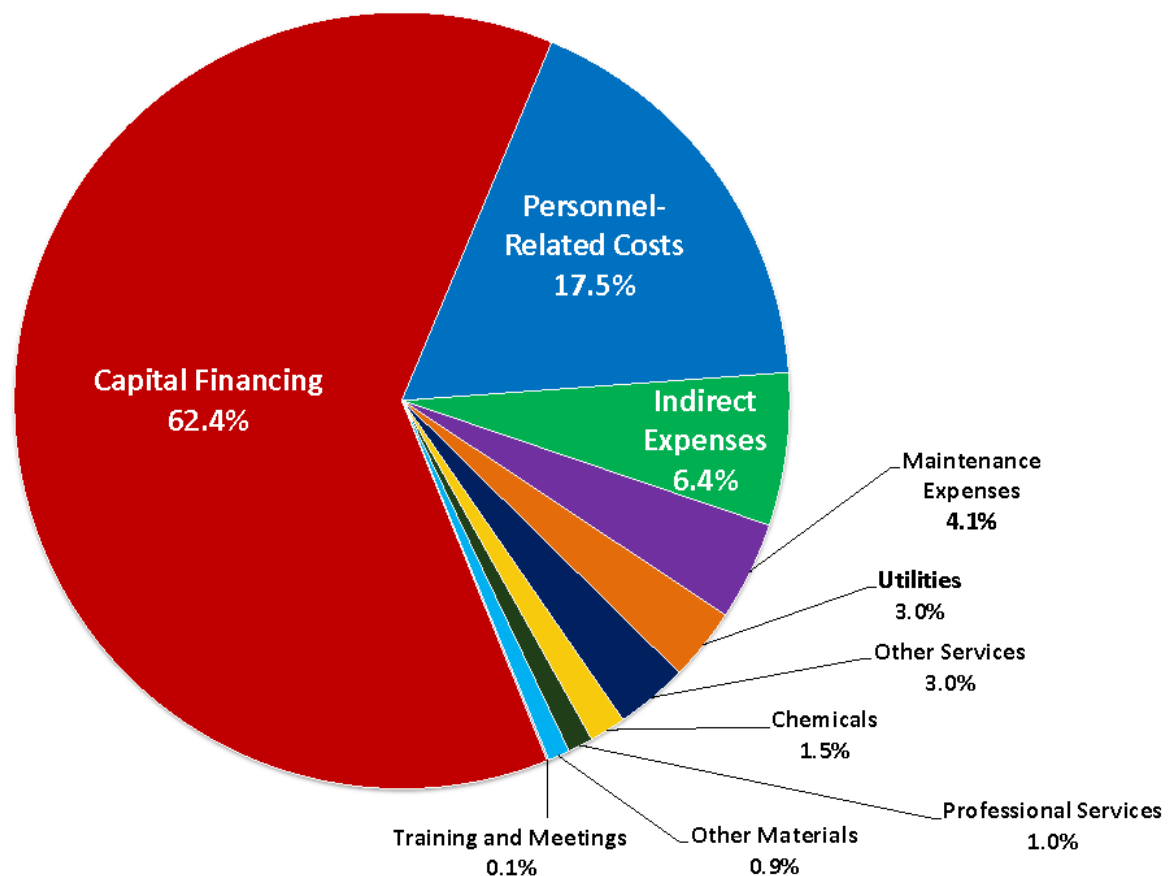
Proposed FY20 Current Expense Budget

Proposed FY20 CEB Highlights

MWRA Current Expense Budget (\$ millions)				
	FY19 Budget	FY20 Proposed	\$ Change	% Change
<u>Expenses</u>				
Direct Expenses	239.6	248.8	9.1	3.81%
Indirect Expenses	46.0	50.7	4.8	10.36%
Capital Financing	482.4	497.6	15.2	3.15%
Subtotal Expenses	\$767.9	\$797.0	\$29.1	3.97%
<u>Offsets</u>				
Bond Redemption	0.0	0.0	0.0	-
Debt Service Assistance	0.0	0.0	0.0	-
Subtotal Offsets	\$0.0	\$0.0	\$0.4	-
Net Expenses	\$767.6	\$797.0	\$29.5	3.8%
<u>Revenues</u>				
Other User Charges	3.2	9.2	6.1	190.5%
Other Revenue	9.2	14.9	5.7	61.7%
Rate Stabilization	0.0	0.0	0.0	-
Investment Income	13.6	15.5	1.9	14.3%
Subtotal Non-Rate Revenue	\$25.9	\$39.6	\$13.7	52.7%
Rate Revenue	\$739.0	\$766.7	\$27.6	3.74%
Total Revenue and Income	\$765.0	\$806.3	\$41.3	5.4%

- MWRA's total budget increases 3.8%, but wholesale rate revenue increases 3.74%

Proposed FY20 CEB by Major Category



Direct Expenses

- Direct expenses: \$239.6 million
 - 31.2% of proposed CEB
- Personnel-related costs: \$139.7 million
 - Nearly 57% of all direct expenses and include:
 - Wages and salaries
 - Overtime
 - Fringe benefits
 - Workers' compensation
- Maintenance: \$32.8 million
 - Just over 13% of direct expenses
 - Second largest category
 - Larger maintenance projects are part of the capital budget
- Utilities: \$24.2 million
 - Nearly 9.7% of all direct expenses
 - Electricity: \$18.4 million (almost 76% of utilities)

- Utilities increase 5.8% from FY19
- Other services: \$23.9 million
 - 9.6% of direct expenses
 - Sludge pelletization at the Fore River plant increased by 4.6%
- Chemicals expense: Just under \$12.1 million
 - 4.9% of direct expenses
- Remaining direct expenses: \$16.0 million
 - 6.4% of direct expenses and includes:
 - Professional services
 - Other materials
 - Training and meetings

Indirect Expenses

- Total: \$50.7 million
 - Makes up 6.4% of total expenses
- Largest components are:
 - Watershed-related expenses (\$27.2 million)
 - Pension fund deposit (\$7.3 million)
 - Optional pension fund deposit/Other Post-Employment Benefits (\$6.0 million)
 - Having fully funded the pension, the current approach is to make an OPEB deposit equal to 50% of the Actuarial Calculated Contribution (ACC).

Capital Financing Expense

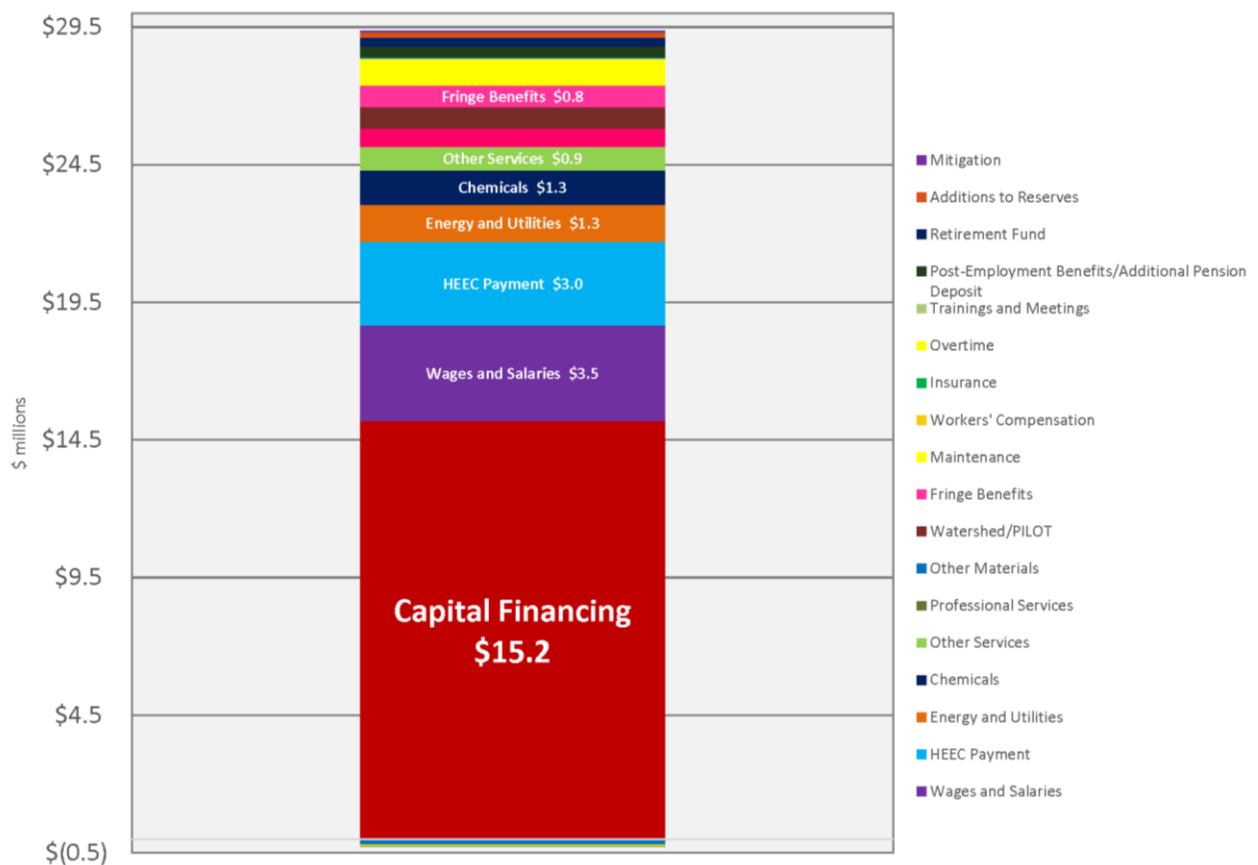
- Total: \$497.56 million
 - Makes up 62.4% of all expenses
- Debt service: \$473.31 million
 - Makes up 95.1% of capital financing
 - Includes principal and interest payments on:
 - State Revolving Fund (SRF) borrowings
 - Senior debt
 - Subordinate debt

Remaining capital financing expenses: \$24.25 million

- Supports:
 - Water pipeline commercial paper program (\$5.85 million)
 - Current revenue for the capital program (\$15.2 million)
 - Capital lease payments for the debt portion of the Chelsea facility (\$3.2 million)

“Delta Report”

Total MWRA Spending Increases \$29.5 Million



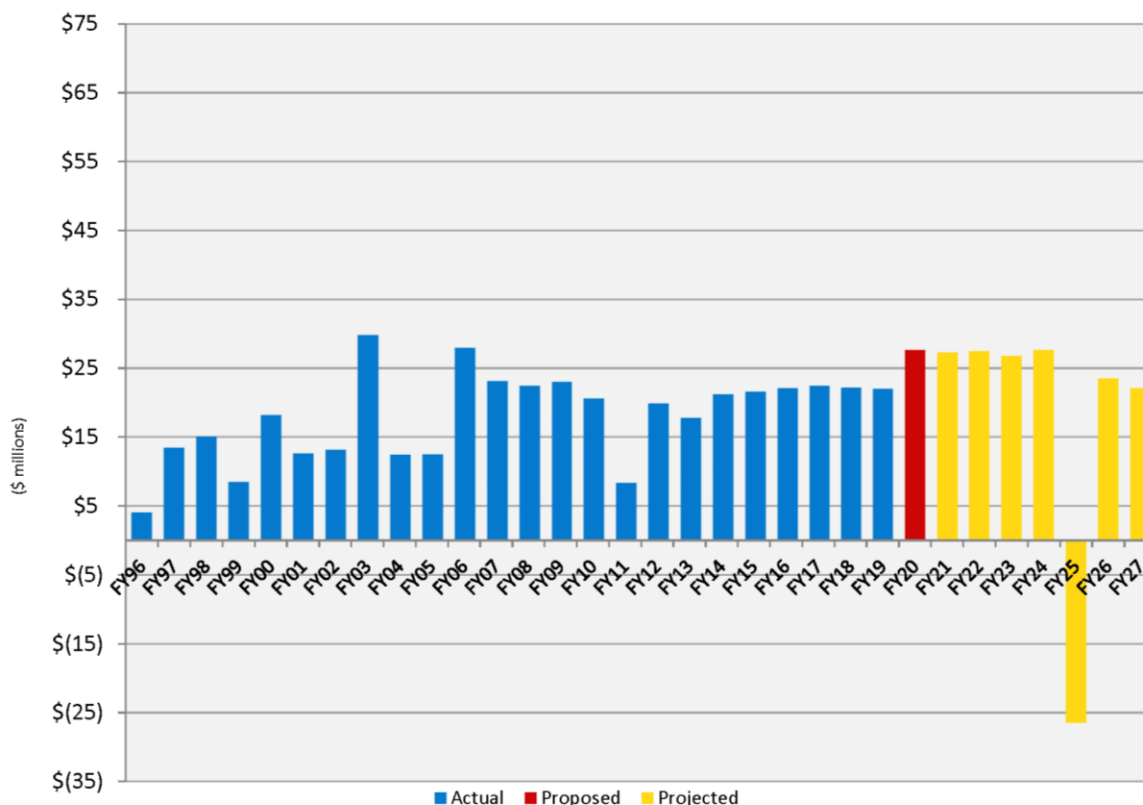
- Debt Service: +\$15.2 million
 - Largest increase
- Wages and Salaries: +\$3.5 million
 - Second largest increase
- HEEC Payment: +\$3.0 million
 - Third largest increase
- Decreases partially offsetting total “delta” include:
 - Other Materials (-\$194 thousand)

Revenues

- Rate revenue requirement: \$766.7 million
 - Increase from FY19: \$27.6 million (3.7%)
 - Makes up over 96.2% of total revenue
 - Raised through wholesale water and sewer rates
- Non-rate revenue: \$30.4 million
 - Increase from FY19: \$7.6 million
 - Makes up 3.8% of total revenue

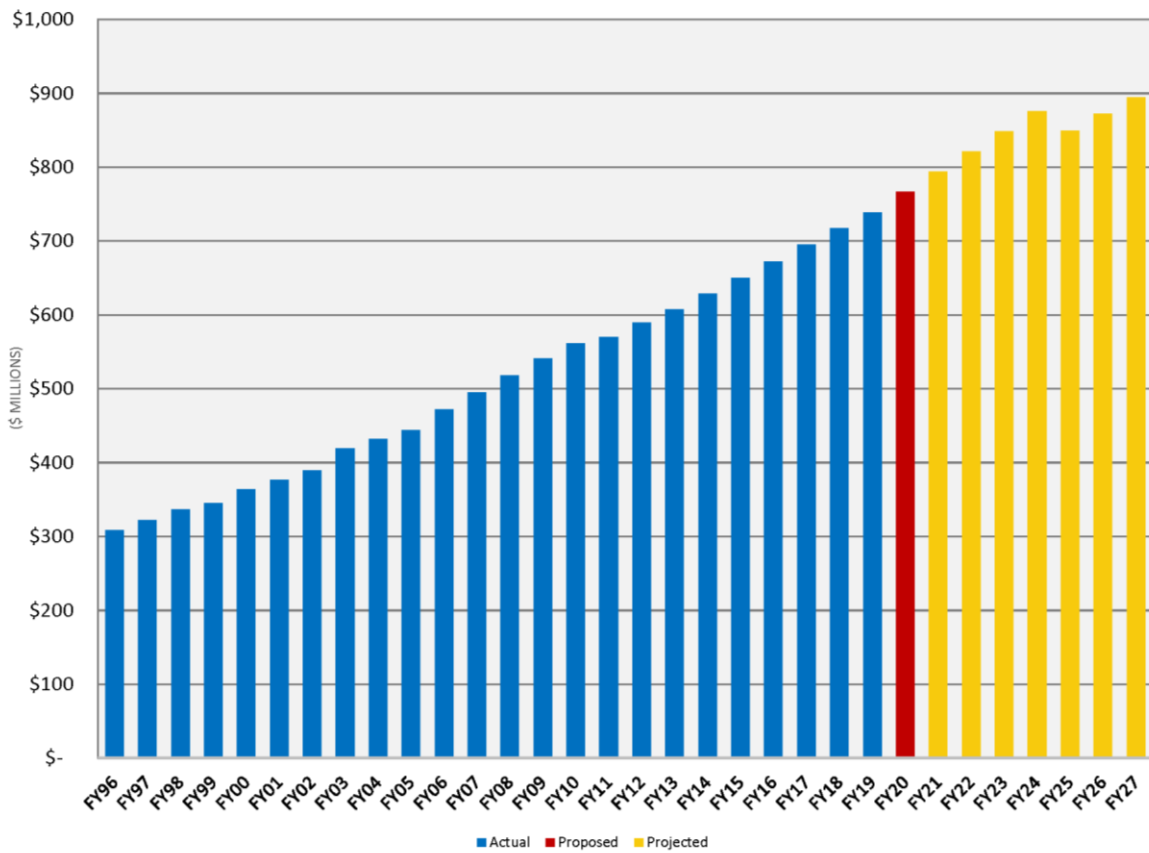
- Sources include:
 - Investment income
 - Other revenue
 - Other user charges
- FY11 increase of 1.49% (\$8.4 million) was the lowest in the previous 15 years, since 1996 when the Authority received \$31.5 million in state debt service assistance.

Annual Rate Revenue Requirement Increases in Dollars



- The rate increases, lower than previous projections, reflect a multi-year rates management strategy to keep rates at sustainable levels during these continued challenging times.
- Defeasance: the prepayment of a portion of a future year's debt service using current-year surplus funds.
 - This tool has been used consistently and strategically
- Proposed FY10 CEB was the first proposed budget to assume benefits of a planned defeasance transaction.
- This assumption allows proposal of lower rate revenue increases than earlier projected.

Annual Rate Revenue Requirement Increases Over Time



Proposed FY20 Current Expense Recommendation

The Advisory Board has recommended or identified about \$4.3 million in line item reductions, some increases, as well as some transfers between line items. Consistent with its practice in recent years, Advisory Board staff worked with Authority staff to incorporate updated assumptions into the budget review.

Therefore, the Advisory Board recommends reducing the FY20 Rate Revenue Requirement by \$4,327,312 resulting in a combined wholesale assessment increase of 3.15%

Major Categories of Spending

Detailed discussion of the major categories of spending follows in order of highest to lowest level of spending:

Table 1

Proposed FY20 CEB Major Categories of Spending	
\$ millions	
Capital Financing	\$497.6
Personnel-Related Costs	139.7
Indirect Expenses	50.7
Maintenance Expenses	32.8
Utilities	24.2
Other Services	23.9
Chemicals	12.1
Professional Services	8.3
Other Materials	7.2
Training and Meetings	0.5
TOTAL EXPENSES	\$797.0
REVENUE	\$797.0

Capital Financing

\$ millions				
Line Item/Description	Final FY19	Proposed FY20	Δ (\$s)	Δ (%)
Total Senior Debt Service	\$272.63	\$204.72	-\$67.92	-24.9%
<i>Outstanding</i>	270.56	204.86	-65.71	-24.3%
<i>New FY17/FY18</i>	2.07	-0.14	-2.21	-106.8%
<i>Potential Defeasance/Restructuring</i>	0.00	0.00	0.00	-
Fixed rate debt service, existing, and new borrowings				
Total Subordinate Debt Service	92.03	170.59	78.56	85.4%
<i>Outstanding</i>	92.03	170.59	78.56	85.4%
<i>New FY17/FY18</i>	0.00	0.00	0.00	-
<i>Potential Defeasance/Restructuring</i>	0.00	0.00	0.00	-
Variable rate debt service: 3.25% interest rate assumption				
Total SRF Debt Service	89.38	93.14	3.76	4.2%
<i>Outstanding</i>	80.79	81.45	0.66	0.8%
<i>New FY18/FY19</i>	8.59	11.69	3.10	36.1%
Low-interest loans from the Commonwealth. 2.0% interest rate (Water); 2.5% (Sewer)				
TOTAL DEBT SERVICE	454.05	468.44	14.40	3.2%
Water Pipeline Commercial Paper	4.75	5.85	1.10	23.1%
Debt service supporting \$25 million/year for the Local Water Pipeline Improvement and Local Water System Assistance Loan Programs				
Current Revenue/Capital	14.20	15.20	1.00	7.0%
Amount of current revenue used to fund ongoing capital projects and to meet coverage requirements				
Capital Lease	3.22	3.22	0.00	0.0%
Chelsea facility lease payment				
Harbor Cable Prepayment	0.00	0.00	0.00	0.0%
HEEC cable capacity reserve fund (one-time fund established to mitigate cross harbor cable replacement costs)				
Debt Prepayment	7.10	4.85	0.00	0.0%
Optional debt prepayment for the purpose of mitigating future rates				
TOTAL OTHER CAPITAL EXPENSES	29.27	29.11	-0.15	-0.5%
Bond Redemption	0.00	0.00	0.00	-
Bond Redemption funds used to reduce capital financing expense				
Debt Service Assistance (offset)	-0.94	0.00	0.94	-100.0%
The state-wide program providing assistance with wastewater debt service is not assumed in the Commonwealth's FY19 budget.				
TOTAL CAPITAL FINANCING EXPENSES	\$482.37	\$497.56	\$15.19	3.1%

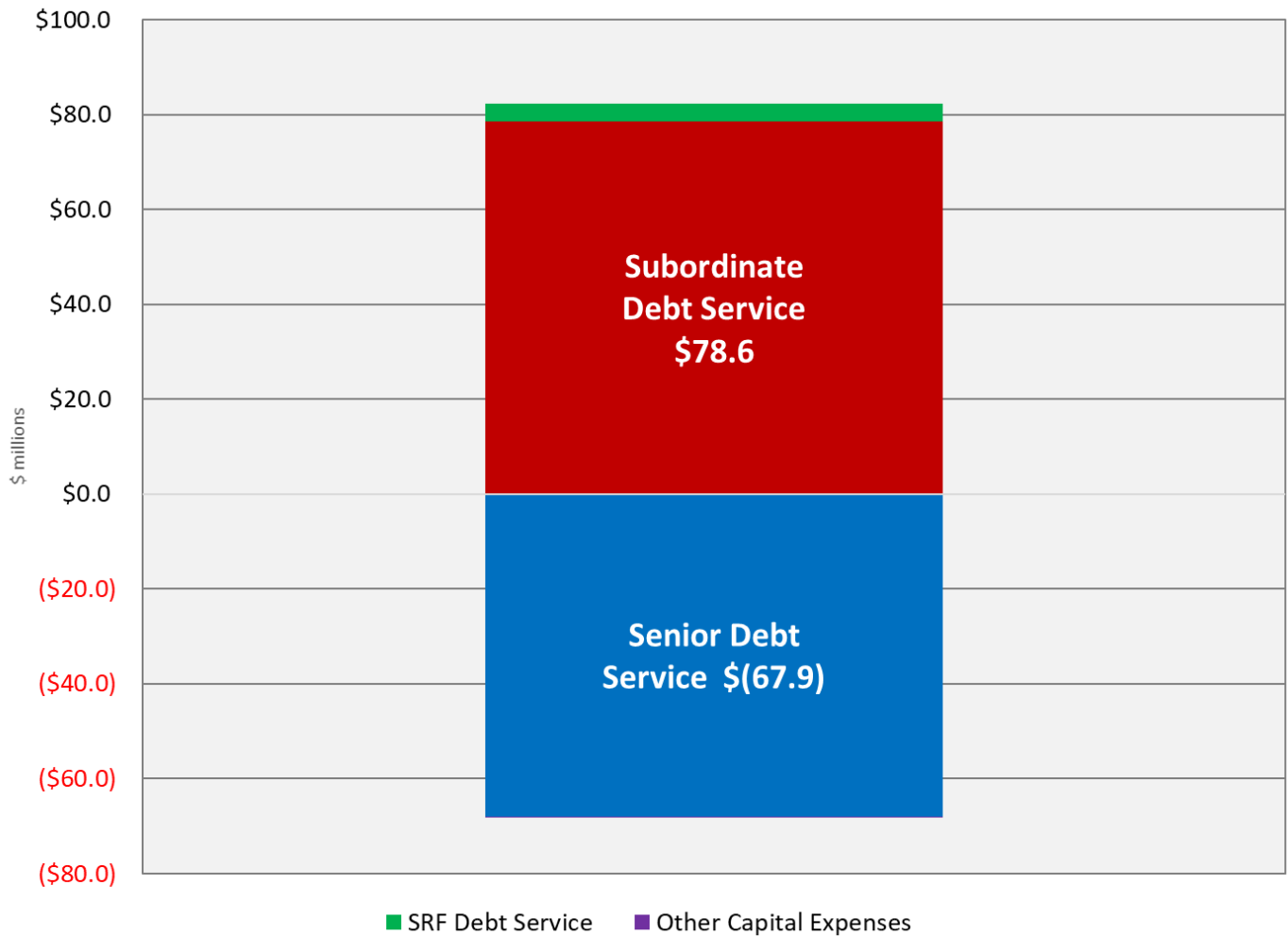
Other Highlights

- Outstanding principal: \$4.9 billion⁵
- Planned FY20 borrowings:
 - MWRA: \$125 Million
 - SRF: \$30.0 million sewer and \$20.0 million water, total of \$50 million
 - The projected capital spending scheduled for fiscal year 2020 is less than scheduled principal payments which will contribute to decrease MWRA's outstanding indebtedness
- Proposed FY20 CEB also includes full year debt service for new borrowings during FY19

⁵ Through December 31, 2018

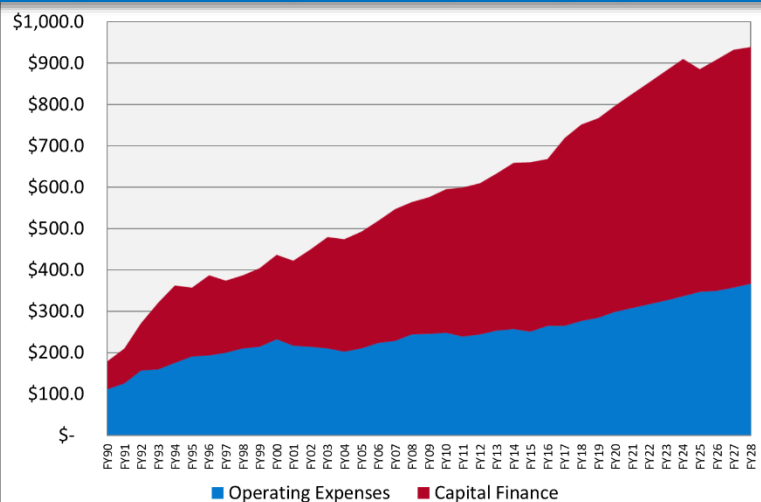
“Delta Report”

Capital Financing Increases \$15 Million



- The Authority relies heavily on debt financing to fund its capital program
- The Authority has spent \$8.4 billion on its capital improvement program⁶
- For FY20, capital financing expense as a percent of all expenses is 37.6%

Capital Financing versus Operating Expenses



⁶ Through FY18

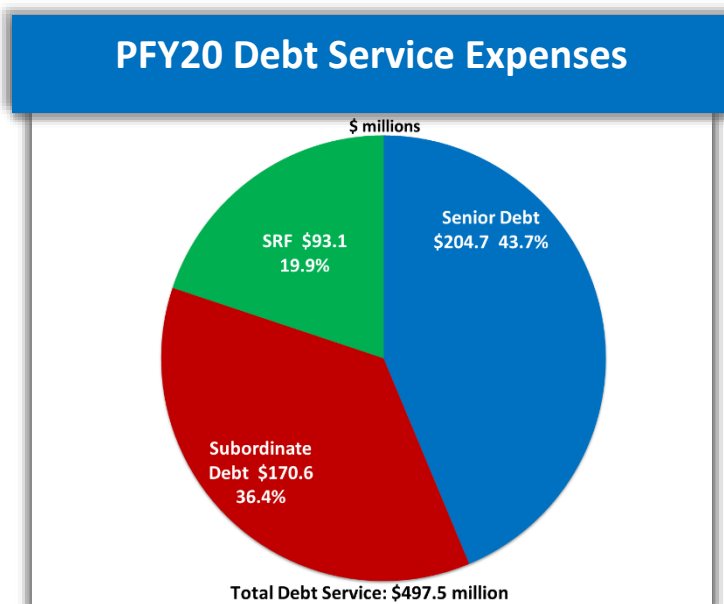
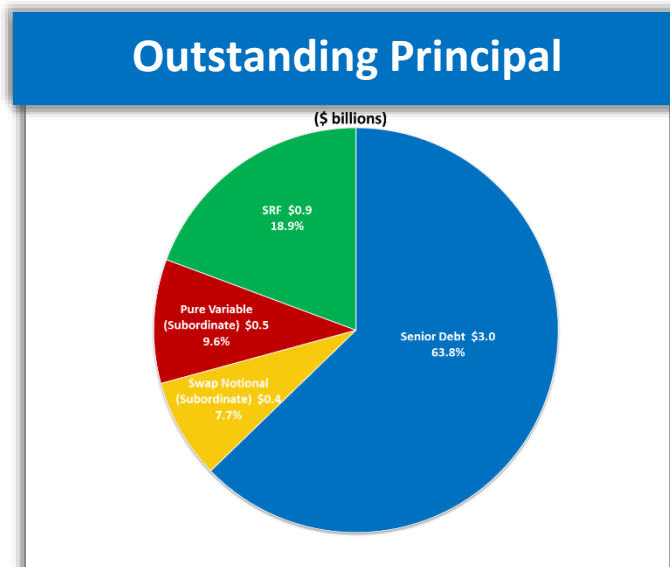
- Outstanding principal borrowed totals \$4.930 billion⁷ and includes four categories:
 - State Revolving Fund (SRF)
 - Pure Variable (subordinate debt)
 - Swap Notional (subordinate debt)
 - Senior Debt
- Commercial paper (CP) outstanding: \$175 million
- Outstanding principal is declining and is \$113.5 million less than the prior year

Debt Service on Senior Debt

- FY20 debt service on senior debt is \$204.7 million including:
- \$8.5 million for full first-year costs of planned spring 2019 borrowing of \$125 million
 - \$5.1 million for partial year debt service on new borrowing of \$125 million next spring 2020
 - \$5.2 million in estimated reduced debt service in FY20 from projected 2019 defeasance transaction

Debt Service on Subordinate MWRA Debt

- FY20 debt service on subordinate debt: \$170.6 million
- Variable rate debt interest rate assumption: 3.75%
 - 0.25% higher than the rate in FY19
 - Based on the interest rate for the daily and weekly series; liquidity fees for the Standby Bond Purchase Agreement, Letter of Credit, and Direct Purchase providers; and remarketing fees
 - Federal Reserve Board had initially indicated that rates may increase in the coming fiscal year, so this conservative rate assumption will continue to shield the Authority from risk
- One factor rating agencies consider when updating the Authority's bond rating is how much variable rate debt exposure the Authority has
- Outstanding variable rate debt: \$782.2 million
 - Makes up 15.9% of all outstanding debt
 - Percentage has been declining over the last several years: just five years earlier it was 21% of all outstanding debt



⁷ As of December 31, 2018

Policy Point

Interest Rate Assumptions

“Not Quite Yet”

The Authority has greatly benefited from the historically low interest rates on variable rate debt over the past decade. For years, the MWRA has used variable rate debt (VRD) as a portion of its overall debt portfolio and has saved significant amounts by so doing. Since the MWRA VRD interest rate was modified to 3.25%, and then 3.50%, the actual interest rates have consistently been lower, yielding significant levels of budgeting surpluses. These surpluses became a core component of the defeasance account strategy.

This defeasance account strategy was a landmark agreement to utilize surplus dollars from capital financing items to defease or prepay debt. For the Advisory Board, it was a victory for ratepayers that funds raised from them for capital financing expenses would ultimately be spent for this purpose rather than potentially redirected toward something else. While it approved dedicating these surplus funds, the Advisory Board viewed the high levels of underspending as an unexpected bonus caused by the historically low interest rates. The Advisory Board expected the unusually high levels of surplus funds would eventually decrease once interest rates came up, as they are today.

After seven years of historic lows, the Federal Reserve began raising rates in December 2015, with an additional two increases by March of 2017. In response to this, the Authority had proposed increasing its VRD interest rate assumptions 25 basis points from 3.25% to 3.50% in FY19. To date, even with federal rates continuing to rise, the 3.50% Authority assumption is still higher than the actuals. Despite this, the Authority has again proposed an assumed rate increase of 25 basis points, resulting in a \$1 million cost increase in the proposed FY20 budget.

At the end of 2018, the economic climate showed signs of potential rate increase. Since then, economic forecasts show that interest rates are expected to remain still. The Advisory Board believes that a 25-basis point increase on VRD interest is overly conservative in light of these modified forecasts. While defeasance is always beneficial to the ratepayers, it cannot be simultaneously burdening them.

Therefore, the Advisory Board recommends reducing the variable rate debt interest rate assumption to 3.50%, and the variable rate debt line item by \$1 million to reflect this change.

SRF Borrowings

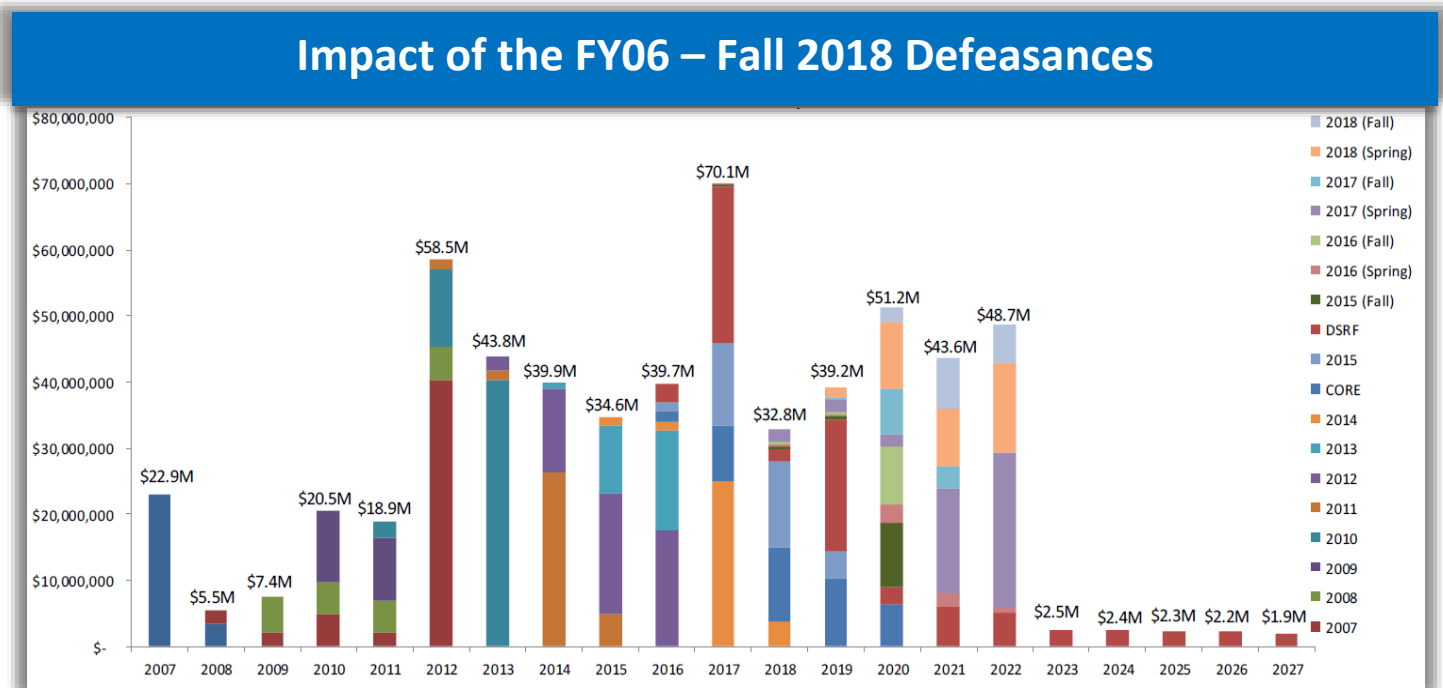
- FY20 debt service on SRF borrowings: \$93.1 million
 - \$8.6 million to support issuances of \$55 million of loans during 2019 and \$55 million 2020
 - These amounts may be updated in the final FY20 CEB
- Outstanding SRF debt: \$935.7 million
 - 19.0% of total outstanding debt⁸

Bond Defeasance and Refunding

- Proposed FY20 CEB assumes a defeasance transaction with a principal amount of \$15 million
 - Total estimated benefit in future years: \$15.9 million
 - Benefits are in FY20 through FY23

⁸ As of December 31, 2018

- Since 2006, through the fall 2018 defeasance, MWRA will have defeased \$587.7 million for targeted debt service reductions over multiple years.



- The Authority continues to look for opportunities for refunding and refinancing to reduce projected debt service
- The Board has authorized the continuation of the defeasance account to receive surplus funds raised for capital financing expenses to manage future rates. The account ensures that these funds are used in a manner consistent with the purpose for which they were budgeted and raised from the ratepayers.

The Advisory Board supports the continued use of the defeasance account strategy, which clearly identifies a use of variable rate debt service savings that is consistent with the original intended use of the funds that were raised.

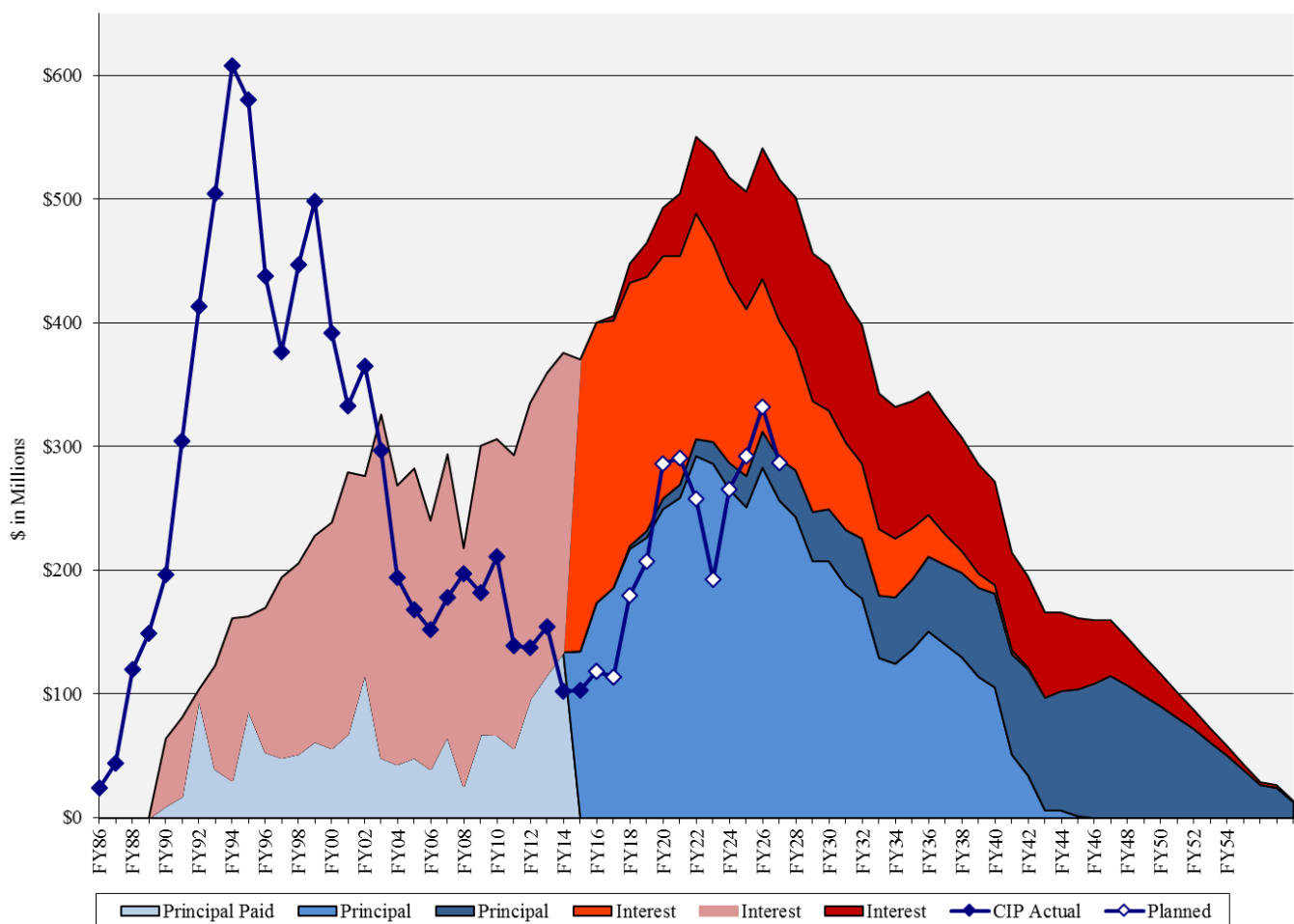
Other Components of Capital Financing Expense

- Water Pipeline Commercial Paper: \$5.8 million
 - Interest payments on commercial paper borrowings for:
 - Local Pipeline Assistance Program (LPAP)
 - Local Water System Assistance Program (LWSAP)
 - Assumptions include:
 - 3.75% interest rate
 - \$175.0 million average balance of commercial paper outstanding
- Capital Lease Payment: \$3.2 million
- Relating to capital costs of Chelsea administration and maintenance facilities; flat annual cost
- The amount has remained the same since 2002
- Annual lease costs, insurance and taxes are included in the “Other Services” section
- Current revenue for the capital program: \$15.2 million
- The FY18 budget was \$14.2 million; the FY17 budget was \$13.2 million

Debt Service Offsets

- Debt Service Assistance funds from the Commonwealth have been a critical tool in managing sewer (and some water) revenue increases for MWRA communities
 - Proposed FY20 budget assumes \$0 funding
 - Earlier, the Administration confirmed the funding of \$890 thousand for MWRA debt service assistance in the FY19 budget

CIP Spending vs. Capital Financing Repayment



Policy Point

Alternative Capital Financing

“The Right Financing for the Right Project”

Even with the construction of Deer Island and the Metro West Tunnel behind us, the Authority still has large, complex projects ahead of it. These unique projects raise unique challenges for funding. Deviation from traditional practices of tax exempt bonds and 30-year debt may be necessary for the Authority and beneficial to the ratepayers.

Having a large Capital Improvement Program, and an excellent credit rating, the MWRA’s tax-exempt bonds are attractive to many investors. The tax-exempt status generally allows investors to take in a maximum value. These bonds are met with some limitations, however, when it comes to the kind of projects they can fund. For a bond to be tax-exempt, it undergoes two evaluations: one for private use and the other for private payment. In short, the tax-exempt entities, or its partners, may not yield profit from the projects associated with the bonds. MWRA projects generally fit into these tax-free categories automatically. The use of taxable bonds has not been a particular need for the Authority, but there are some unique challenges ahead that could benefit from methods of funding.

The greatest priority with all MWRA borrowing is long-term rates management. The goal is to deliver sustainable and predictable rates to ratepayers, being mindful of variable generational equity and total debt totals. The ratepayers should not be burdened with unnecessary debt or unattainable rate costs either. With this in mind, the Authority has upcoming projects that could potentially qualify for taxable bond status. These include the implementation of the Lead Service Line Replacement Loan Program as well as maintenance towards the Wachusett Railroad. Both of these projects involve partnership with parties that could possibly fall under the private use and private partnership concepts mentioned earlier. While the lead program is already in place, its current funding mechanism is through the current revenue for capital projects (Pay-Go) fund. The use of pay-go has a benefit of interest-free payments; this is an attractive payment method on projects that have short lifespans. Its disadvantage is its immediate impact on utility rates. Additionally, pay-go funds in the immediate fiscal years are committed towards the cross-harbor cable replacement project. With changes in the political and economic environment, lower tax rates make some of the financial differences between taxable and tax-exempt bonds less competitive. Additionally, the increased use of pay-go, and therefore the unnecessary and burdensome rate hikes on communities, cannot be an option. The Advisory Board believes that the MWRA should analyze the current market to see if there would be a benefit to the ratepayers in the use of taxable bonds in these cases. Additionally, taxable bonds may make the task of working with private organizations after the completion of these projects less complex.

The Advisory Board recommends that the Authority continue explore the potential financial gains from using taxable bonds on appropriate capital projects, particularly when analyzing the funding structure of the HEEC cable replacement costs.

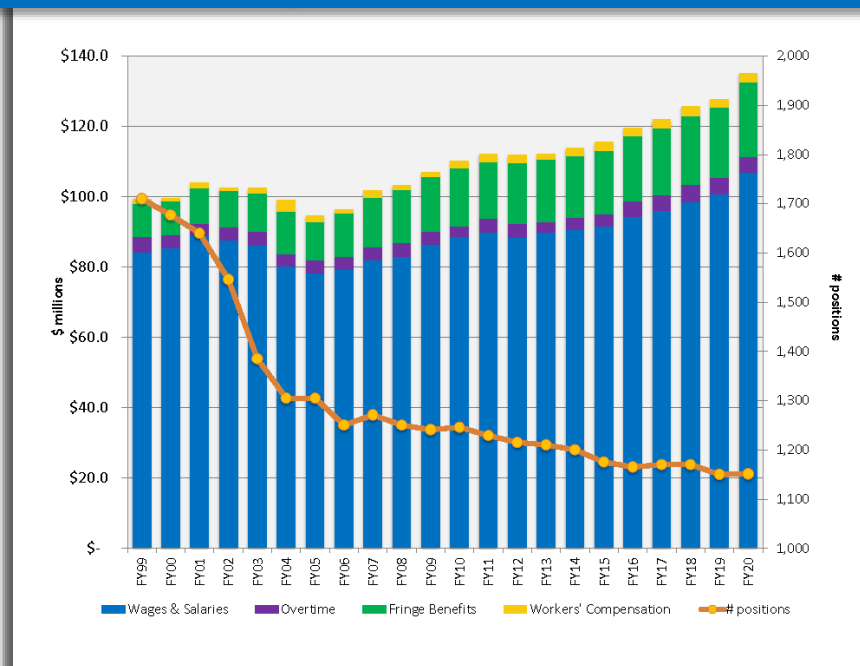
Personnel Expenses

Line Item/Description	Final FY19	Proposed FY20	Δ (\$s)	Δ (%)
<i>Regular Pay</i>	\$105,309,460	\$108,753,564	\$3,444,104	3.3%
Regular wages and salaries for full- and part-time employees.				
<i>Other Pay</i>	1,722,572	1,767,006	44,434	2.6%
Includes shift differential, holiday pay, temporary employees, interns/co-ops, and stand by pay.				
Wages and Salaries Subtotal	107,032,022	110,520,570	3,488,548	3.3%
Fringe Benefits	21,173,571	21,965,210	791,639	3.7%
Includes health insurance, dental insurance, Medicare, and all other fringe benefits.				
Overtime	4,447,554	4,898,965	451,411	10.1%
For planned maintenance, emergency, and coverage.				
Workers' Compensation	2,422,609	2,354,256	-68,353	-2.8%
Includes compensation payments, medical payments, and other related costs.				
TOTAL PERSONNEL EXPENSES	\$135,075,756	\$139,739,001	\$4,663,245	3.5%

Other Highlights

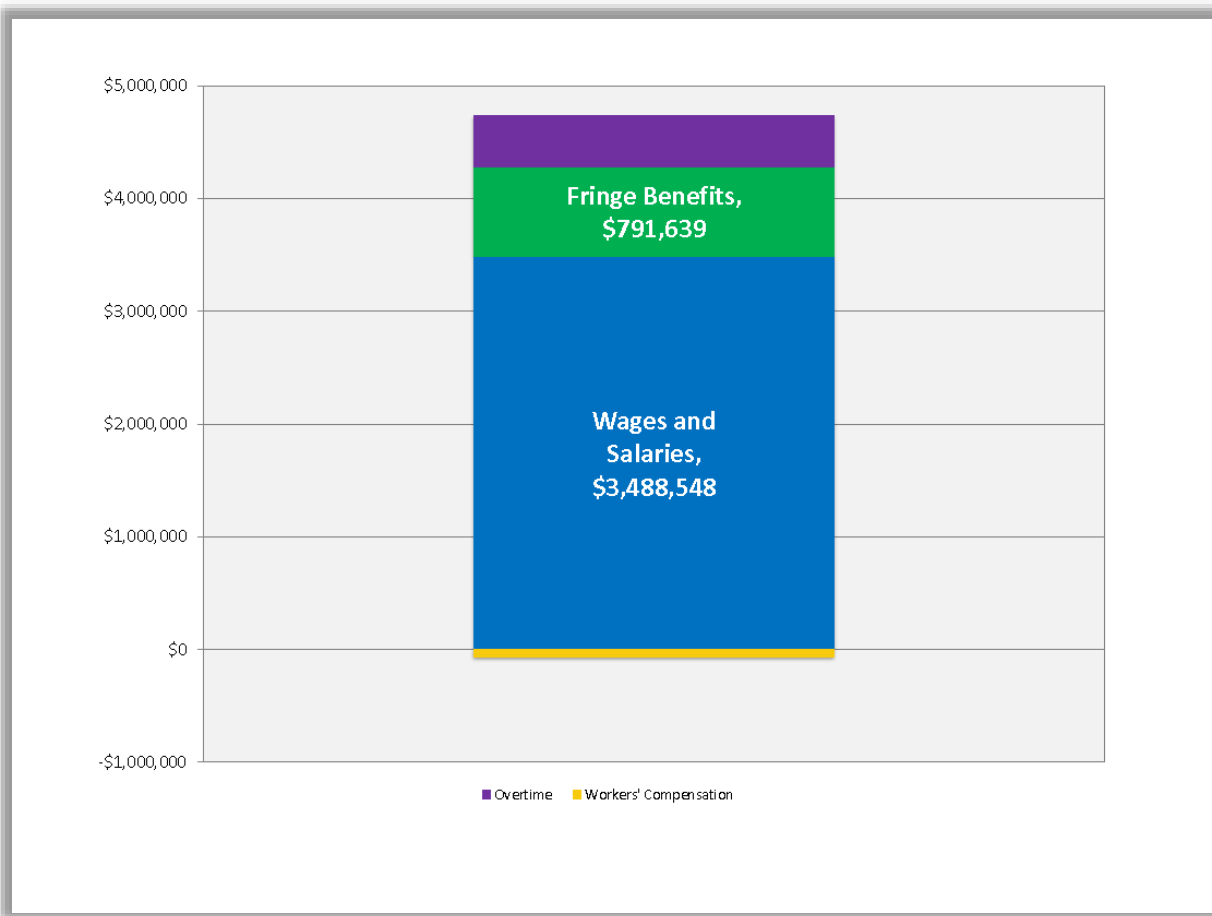
- Wages and salaries expense include FY20 COLA increases.
- Average funded staffing level: 1,150, plus ten budgeted for long-term water redundancy project
 - 5 additional positions added for redundancy project in FY19, 5 additional budgeted for FY20
 - Assumption for FY20 was reduced from an additional 5 to an additional 3 FTE for redundancy
- Fringe benefits expense increased mainly due to the reported increase from the GIC; calculations are based on current enrollment; included in the Fringe Benefits budget for health insurance for retirees (see Indirects)

Personnel Expenses vs. Funded Positions



“Delta Report”

Personnel Expenses Increase \$4.7 Million



- Staffing levels have decreased by over one-third since 1997
- Proposed FY20 = 1,150 FTEs plus 10 for water redundancy project; FY19 = 1,150 FTEs plus 5 for redundancy
- Total Reduction: 607 positions down to 1,150, with FY19 being first significant increase in years
- December 2018 staffing level: 1,130.8 FTEs
 - December 2018 Tunnel Redundancy staffing level: 3.8 FTEs
- New hires tend to begin at lower pay-rates than the incumbents, helping to contain costs
- New hires pay a higher percent of health insurance premiums, reducing fringe benefits costs

Wages and Salaries

- Increase from FY19: +\$3.5 million (3.3%)

Due to the lag time inherent in backfilling vacancies, the Advisory Board recommends that the Authority adjusts its attrition/vacancy rate assumptions by \$950,000 (includes associated fringe benefits). Advisory Board also recommends a reduction of \$450,000 for fringe benefits based on GIC actual rates and enrollment and another \$250,000 for sick leave accrual.

- To put this recommendation in perspective: as of the Spring of 2019, the Authority was projecting underspending in Salaries & Wages by over \$4.5 million

Fringe Benefits

- Fringe benefits make up 15.7% of total Personnel-related expenses.

The Advisory Board expects the MWRA to increase the proposed Fringe Benefits line due to the Commonwealth's new Paid Family and Medical Leave (M.G.L. Chapter 175M) which begins on July 1, 2019.

The Advisory Board supports the concept of the Paid Family and Medical Leave program, though some questions remain about whether the Commonwealth is in position to begin this program as early as July 1, and the Advisory Board also has concerns about whether an entity like the MWRA –

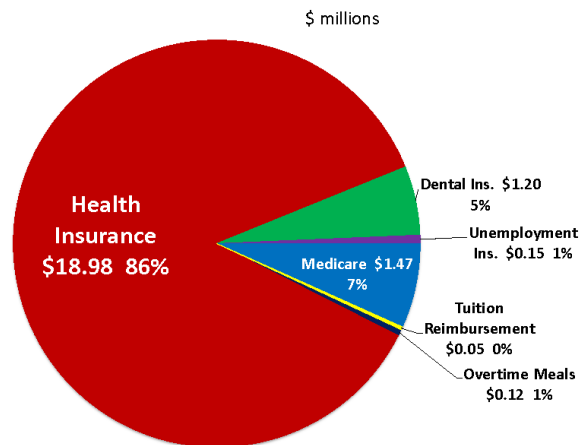
which already provides overlapping benefits – will be paying into this PFML program but not see its employees use the benefits, thus be using ratepayer dollars to subsidize other businesses' employees.

In the spirit of support for the concept of the PFML program, the Advisory Board agrees with the adjustment for FY20, however, the Advisory Board recommends that no payment be made to the Commonwealth until the following steps have been taken:

- (1) Authority should sit with unions to determine if a private plan option is preferable, which may avoid the MWRA paying into a State system that does not benefit its employees but instead uses ratepayer dollars to subsidize other businesses in the Commonwealth*
- (2) Look at 3rd party administrators of a private plan option to determine the cost savings that may be available through opting out of the Commonwealth's program*

The MWRA will not be an ATM for the Commonwealth's PFML program.

Proposed FY20 Fringe Benefits Expenses



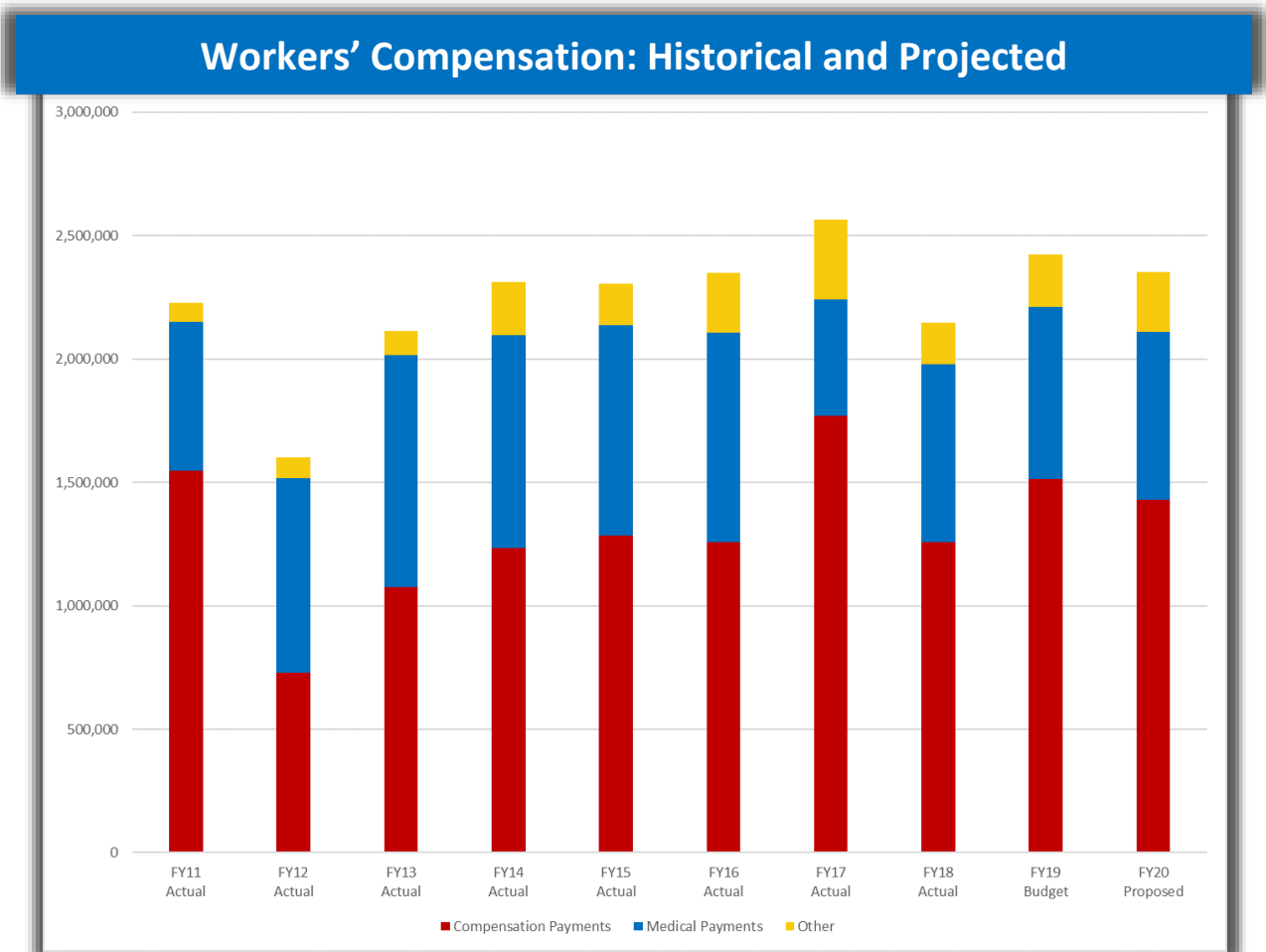
Overtime

- Increase from FY18: +\$451 thousand (+10.1%). Due largely to increased number of wet weather events

Workers' Compensation

- Based on a three-year average of costs
- Factors include number and severity of cases, increases in medical expenses over the years and settlements.
- MWRA staff administer the program including processing and monitoring injured employees' claims, coordinating claims investigations, working with injured employees to return them to work, and attending hearings at the Department of Industrial Accidents
- MWRA is self-insured
- Authority uses services of a third party administrator for claims management, utilization review, payment processing for lost time compensation and payment of medical bills

- Annual budget includes actual expenses for weekly compensation payments to injured employees for lost time, payments for medical care, and other expenses (DIA hearing fees, medical examinations costs and investigation services)
- The budget also includes reserves for each workers' compensation claim (both compensation for lost time and medical expenses) which represent the estimated future liability for each claim



- MWRA maintains ongoing safety and training programs to promote and maintain a safe work environment, including confined space entry, trench safety, ladder staging, evacuation training and electrical safety, plus safe lifting training
- Light duty assignments are also utilized
- The Authority reports regularly on injury and illness rates as well as highlights of the workers' compensation program (including light duty returns), in the quarterly Orange Notebooks
 - New reporting has been added to the FY19 Orange Notebooks at the request of the Board of Directors

Overtime

- Increased by 10.1% (\$451 thousand)
- Largest drivers include:
 - Wastewater operations (9.5% increase of \$87.6 thousand)
 - Waters operations and maintenance (14.2% increase of \$151.5 thousand)

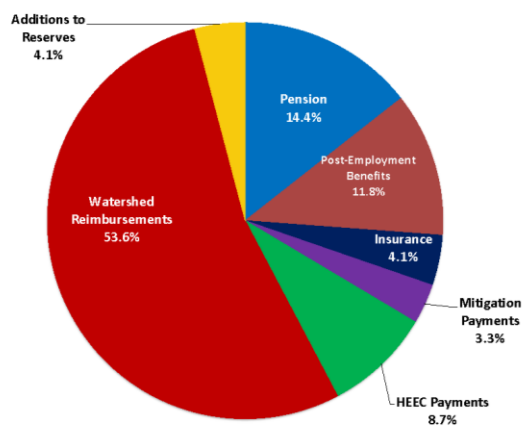
Indirect Expenses

Line Item/Description	Final FY19	Proposed FY20	Δ (\$s)	Δ (%)
Pension	\$7,000,000	\$7,315,000	\$315,000	4.5%
Scheduled updated contribution to retirement fund. Required annual contribution = \$5.9 million. Updated mortality tables impact = \$2.2 million.				
Post-Employment Benefits/Additional Pension Deposit	5,574,152	5,962,457	388,305	7.0%
All other benefits for retirees (e.g. health insurance). Line item relabeled to reflect expectation of transfer into the pension fund consistent with long-term strategy.				
Insurance	2,099,064	2,081,406	-17,658	-0.8%
Insurance and payments/claims.				
Mitigation Payments	1,614,262	1,654,618	40,356	2.5%
Mitigation payments to Quincy and Winthrop.				
HEEC Payments	1,386,832	4,429,316	3,042,484	219.4%
Cross harbor cable to Deer Island (includes both debt service and O&M components).				
Watershed Reimbursements	26,406,427	27,194,708	788,281	3.0%
Supports the operations and related costs of the state's Department of Conservation and Recreation, Office of Watershed Management.				
Additions to Reserves	1,881,797	2,086,626	204,829	10.9%
1/6th of all planned Operating Expenses.				
TOTAL INDIRECT EXPENSES	\$45,962,534	\$50,724,131	\$4,761,597	10.4%

Other Highlights

- The funded ratio as of January 1, 2018:
 - Actuarially funded: 95.0% (ratio of actuarial value of assets to actuarial accrued liability)
 - Market value funded: 96.2% (ratio of market value of assets to actuarial accrued liability)
- A new actuarial study has been commissioned for January 1, 2019
- "Virtual Full Funding" is an industry term that recognizes how difficult it is to get to exact 100% funding of the pension liability; it is considered to be between 95% and 105% funded
- FY20 Pension annual required contribution (ARC) of \$7.3 million is based on a FY26 schedule for reaching full funding
- Other Post-Employment Benefits (OPEB) combined with pension obligations are treated as one total liability, with funding for OPEB contingent upon pension full funding
- Insurance expense based on anticipated market conditions
- Costs of the Division of Watershed Management are treated as a reimbursement to the state and include PILOT payments and debt service on watershed land purchases, as well as direct operating expenses
- HEEC payments for O&M and debt service charges increase by \$3.0 million (+219.4%). See [policy section](#).

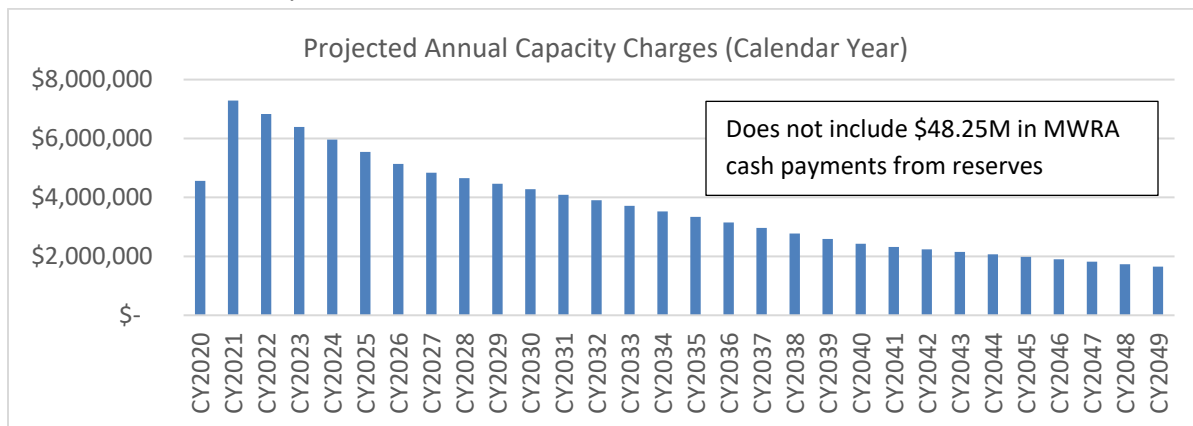
Indirect Costs by Type



“HEEC Costs”

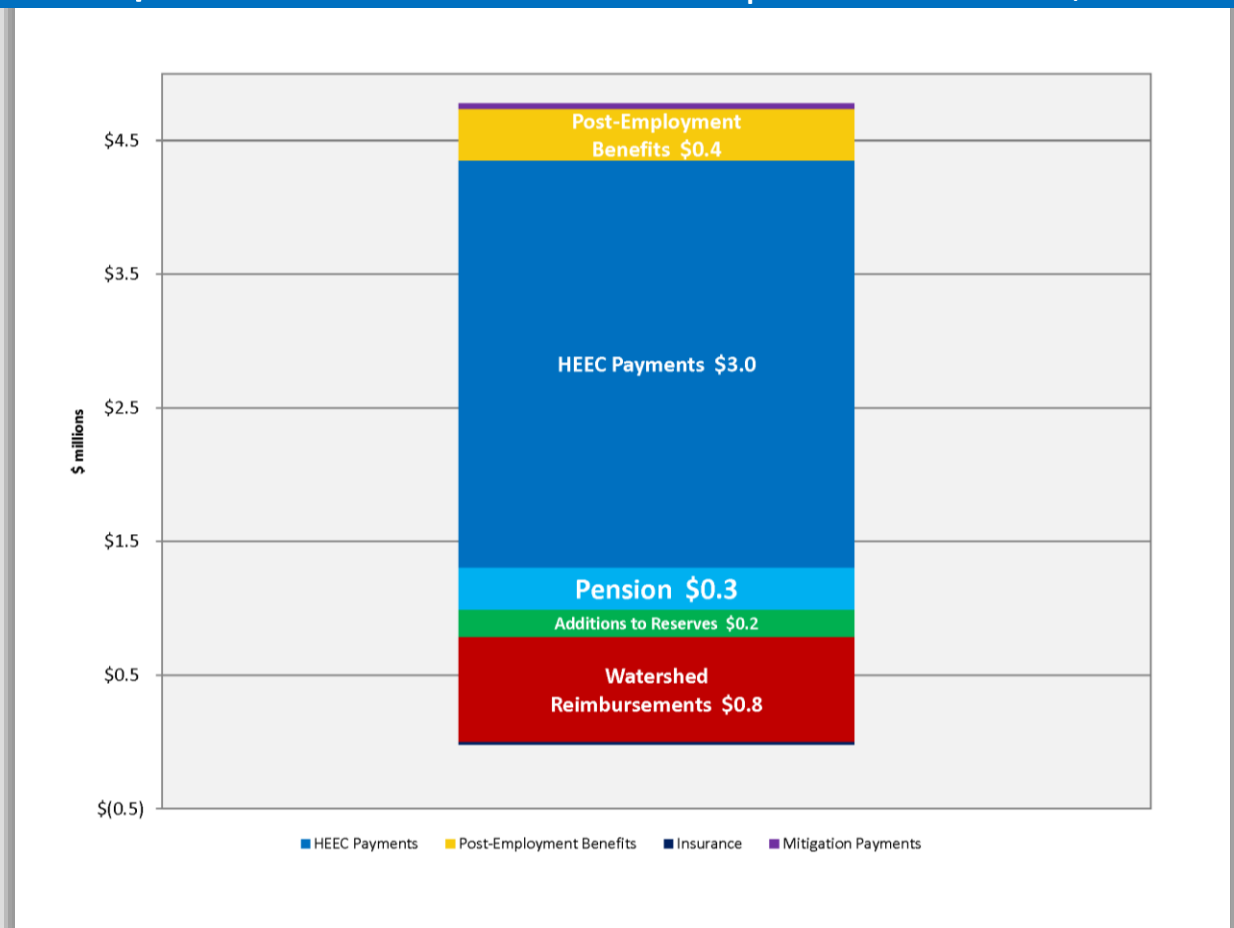
The Plan to Pay It Off

The present dollar value of the cable is \$114 million, less a \$17.5 million credit that is applied against the cost, due to the life of the asset that still remained prior to having to replace it. Below is the schedule to pay off the costs of the new cable between now and calendar year 2049.



“Delta Report”

Indirect Expenses Increase \$4.8 million



Other Post-Employment Benefits (OPEB) and Pension

- Retirement fund is still on track to be fully funded by 2026
 - The funding schedule was moved out from 2024 in the January 1, 2018 actuarial study
- FY19 pension/OPEB expense: \$12.6 million
 - \$7.0 million = annual required contribution
 - \$5.6 million = optional OPEB contribution
- Proposed FY20 pension/OPEB expense: \$13.3 million
 - \$7.3 million = annual required contribution (ARC) (based on January 2019 actuarial report)
 - \$6.0 million = optional OPEB funding
- Governmental Accounting Standards Board (GASB) Statement No. 45 has historically governed the accounting and financial reporting of OPEB, with GASB 75 now replacing GASB 45
 - Governmental entities are not currently required to fund OPEB
- Key differences between the OPEB Trust Fund and the MWRA Retirement System:
 - The MWRA Retirement System is administered by a Retirement Board and overseen by PERAC; the Retirement System is legally obligated to produce an actuarial schedule, have that schedule approved by PERAC, and then meet the pension contribution obligation
 - The MWRA's OPEB Trust Fund was established as a "best practice" which is becoming more and more prevalent under the GASB changes because establishing a trust fund allows the Authority to count its OPEB assets against its OPEB liabilities on its year-end balance sheet
 - The Authority established an OPEB Trust Fund as a matter of best practice in the Spring of calendar year 2018, and invested all long-term OPEB funding into PRIT, referred to for OPEB investments as the State Retiree Benefits Trust (SRBT)
 - Total value of cash and investments of the MWRA's OPEB Trust Fund as of February 2019 was \$30.3 million
 - Total actuarial accrued liability as of January 1, 2018: \$146.3 million
 - The actuarial valuation of the MWRA's Retirement System as of January 1, 2018: \$523.1 million
 - Total actuarial accrued liability as of January 1, 2018 \$550.8 million
 - While the annual MWRA Retirement System contribution addresses both the actuarial long-term liability and the annual retirement payments to retirees, the optional OPEB Trust contribution is only aimed at addressing the long-term liability, while the actual cost of providing health care benefits to retirees is paid out of the Fringe Benefits budget; for example:
 - FY20 OPEB Trust contribution (optional): \$5.6 million
 - FY20 Fringe Benefits budgeted for health care of retirees: \$4.5 million
 - Total OPEB costs in FY20 Budget: \$10.1 million

The Advisory Board reiterates its recommendation that OPEB and Pension be treated as "two sides of the same coin" – any significant swings in the annual contribution to the Pension system related to maintaining "virtual full funding" should be offset with a reduction to the optional contributions to the OPEB Trust Fund.

Insurance

- Claims expense, proposed at \$0.4 million, is based on a five-year average (FY14-18)
- Premiums expense is based on anticipated market conditions
- Bond Resolution requires that an independent insurance consultant review the funding level every three years
- Insurance Reserve Fund is currently funded at \$14.0 million

Additions to Reserves

- The Operating Reserve level requirement: 1/6th of all designated expenses
 - Proposed FY20: \$2.1 million
 - Final FY19: \$1.9 million

The Advisory Board recommends increasing the “additions to reserves” line item for FY20 by \$99,113 to correspond to the recommended reductions in eligible line items.

Watershed Reimbursement

- Other costs relating to watershed management have been added in recent years to both the Authority’s CEB and CIP budgets. These include funding for new acquisition of watershed lands, dam repairs and PCB removal, as well as dam inspections and invasive species surveys and control.
- In FY16 the MWRA paid off remaining watershed debt service totaling \$37 million
 - Up until this point, the payments had been evenly spread at \$5.6 million/year
 - There will be no more spending in this line item moving forward

Watershed Reimbursement				
Categories	FY19 Budget	FY20 Proposed Draft	Δ (\$s)	Δ (%)
Operating Expenses	\$18,006,427	\$18,439,708	\$433,281	2.4%
Debt Service	0	0	\$0	-
Payment in Lieu of Taxes (PILOT)	8,400,000	8,755,000	355,000	4.2%
SUBTOTAL (Expenses)	\$26,406,427	\$27,194,708	\$788,281	3.0%
Revenue	990,000	960,000	-30,000	-3.0%
TOTAL (Revenue Deducted)	\$25,416,427	\$26,234,708	\$818,281	3.2%
Proposed Watershed Capital Budget				
A capital budget was proposed for the watershed beginning formally in FY17. This is separate from the Watershed Division's operating budget.				
Capital Projects	1,600,000	1,575,000	-25,000	-1.6%
TOTAL	\$27,016,427	\$27,809,708	\$793,281	2.93%

- Watershed revenues function as an offset to the total Watershed Reimbursement.

Policy Point

Watershed Capital Budget

Adjusting for Vacancies

The Division of Water Supply Protection's Office of Watershed Management was created by Chapter 149 of the Acts of 2004, and its purpose was to provide a more efficient mechanism for MWRA's funding of the watershed. The Water Supply Protection Trust allowed the Office of Watershed Management to fill a wide range of critical positions that were previously frozen due to state budget constraints, as well as to fund necessary infrastructure improvements. The Trust was created to ensure the protection of our watersheds, insulating the Division from politics, bureaucracy, and the uncertainties of state finances.

The Watershed Management budget is 100% funded out of the MWRA's budget, meaning that it is totally funded outside of the Commonwealth's budget. But despite this fact, the Watershed Management group went for long stretches of time with vacancies in positions that are critical to their mission and to the quality of water for MWRA's ratepayers:

- Top position (Director) for Quabbin/Ware region vacant for over a year
- Top position (Director) for Wachusett Region left vacant for 8 months
- As of the Fall of 2018, nearly 20 positions were unfilled, some for as long as 10 months

When pushed by the Advisory Board to answer why these positions were not being filled, DCR leadership promised a staffing study to determine if many of the vacant positions (that had been budgeted) were actually necessary. The Advisory Board did not ask for this study, but was certainly interested in the outcome. DCR provided this staffing study to the Authority and Advisory Board on May 22, 2019 (very late in the budget process for FY20).

The Advisory Board's recommendation (see below) to reduce the budgeted amount for Salaries & Wages was based on actual spending, and did not recommend any reduction in workforce – the Advisory Board would like the Watershed Division to have all the staff they need to complete their mission, which is vital to the success of the MWRA.

But the DCR staffing study calls for a reduction of FTEs from 157 FTE in the previous workplan to 150 by eliminating 3 positions and reclassifying 4 positions from full-time laborer to seasonal staffing. The Watershed Division has continuously had actual staffing in the 134-to-142 FTE range, as opposed to the previously targeted 157 FTE amount, and is projected to turn back \$2.7 million in their current FY19 budget.

The Advisory Board recommends MWRA funding for the Watershed Division be reduced by a minimum of \$500,000 due to historically budgeted but unfilled positions. The Advisory Board also assumes that the Authority will use the staffing study, that was proposed by DCR in the Fall of 2018 and purported to be the basis of Watershed staffing needs, to adjust the FY20 Watershed Salaries & Wages.

In light of the Watershed Division's staffing study, the Advisory Board expects the MWRA to work with the Watershed Division and the Executive Office of Administration and Finance to insure that there is a seamless hiring process in the future, and not lose sight of the fact that the fundamental reason the Watershed Division operates outside of the Commonwealth's budget is to insulate them from the restraints of the Commonwealth's finances.

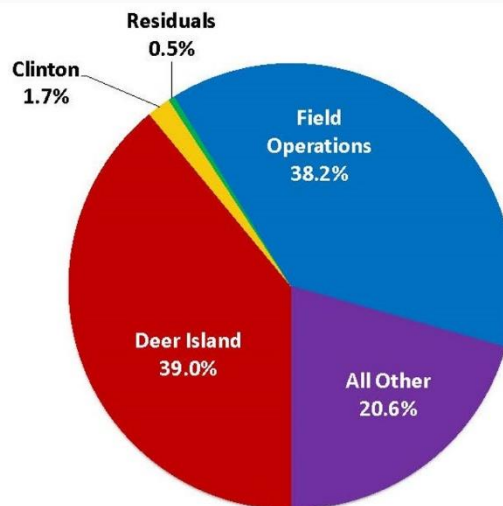
Maintenance Expenses

Line Item/Description	Final FY19	Proposed FY20	Δ (\$s)	Δ (%)
Buildings and Grounds Expense	\$5,851,337	\$4,736,873	-\$1,114,464	-19.0%
Materials and services for maintaining buildings and grounds.				
Automotive Expense	638,000	628,000	-10,000	-1.6%
Materials and services for maintaining vehicles.				
Plant and Machinery Expense	11,122,874	12,748,445	1,625,571	14.6%
Materials and services for maintaining plant and machinery expenses. (E.g. drive chains, facility painting and coating)				
Pipeline Expense	1,637,132	1,787,132	150,000	9.2%
Materials and services for maintaining pipeline.				
Specialized Equipment Expense	4,634,667	4,133,788	-500,879	-10.8%
Materials and services for specialized equipment. (E.g. grit screens, lab equipment repairs, sewer bucketing equipment)				
Computer Expense	3,941,962	4,376,449	434,487	11.0%
Includes materials services, software licenses and upgrades.				
Electrical Expense	3,023,208	2,930,559	-92,649	-3.1%
Materials and services for maintaining electrical systems.				
All Other Maintenance Expense	1,409,547	1,443,546	33,999	2.4%
Includes HVAC materials and services and purchase cards.				
TOTAL MAINTENANCE EXPENSE	\$32,258,727	\$32,784,792	\$526,065	1.6%

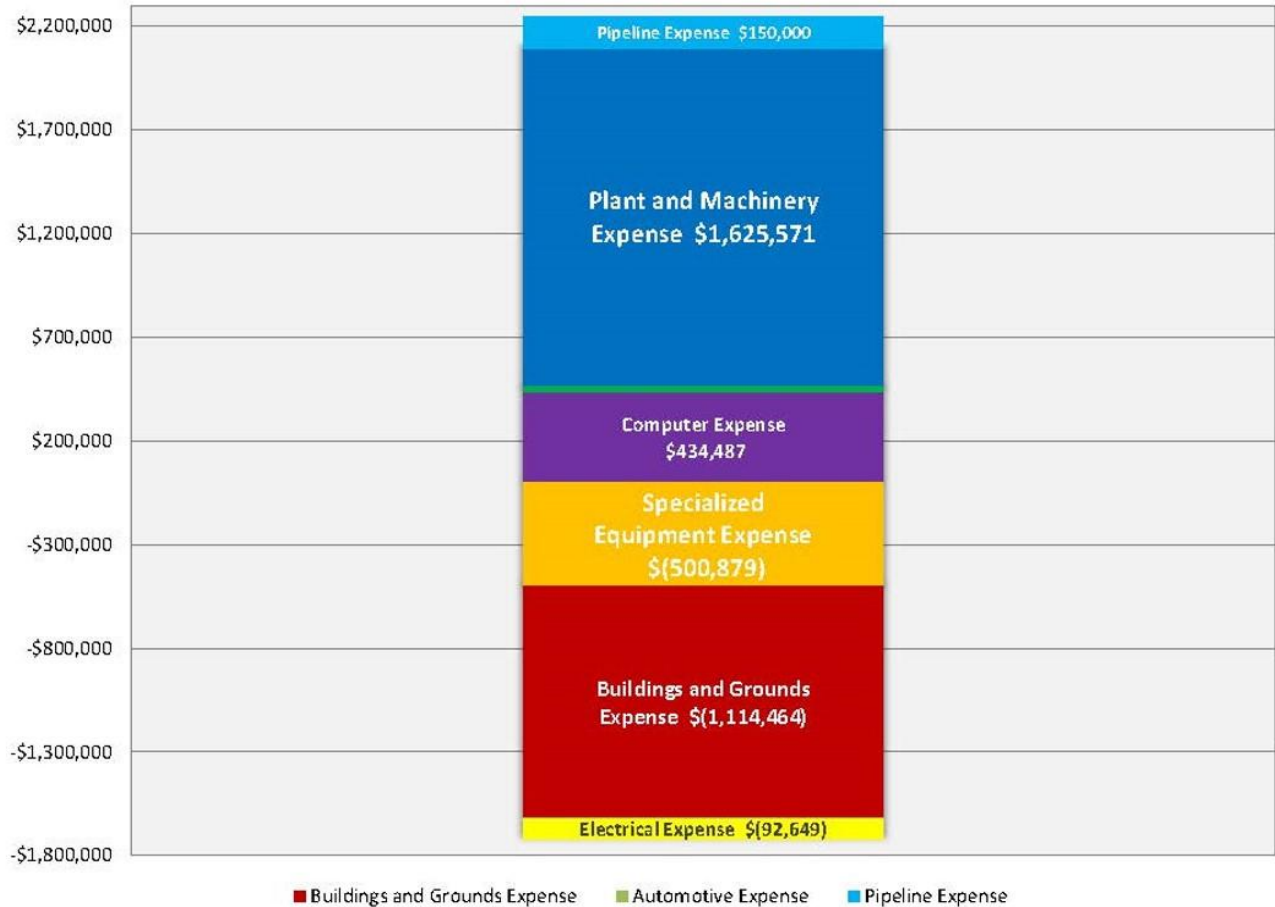
Other Highlights

- FY20 proposed spending increases \$526 thousand, or 1.6%
- Maintenance expense is 13.2% of all direct expenses
- Deer Island maintenance: \$12.8 million
- Field Operations maintenance: \$12.5 million including:
 - CWTP
 - Headworks
 - CSO facilities
 - Water and wastewater pump stations
- Other Operations Division maintenance expenses:
 - Clinton WWTP: \$0.56 million
 - Laboratory Services: \$0.33 million
- Makes up 20.6% of all maintenance spending and includes:
 - MIS: \$4.4 million
 - Fleet maintenance: \$0.6 million
 - Residuals Maintenance is now funded in the CIP
 - Maintenance needs are also funded through the technical assistance group of engineering contracts and through the capital program

Maintenance Spending by Department



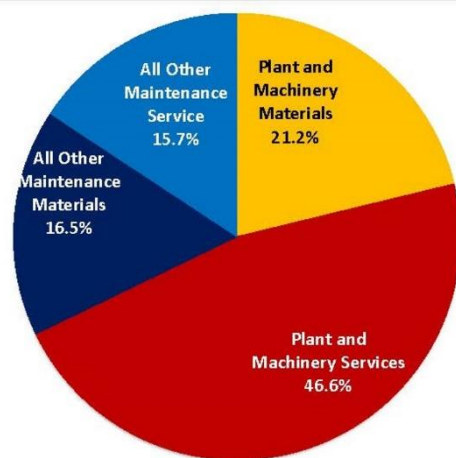
“Delta Report” Maintenance Spending Increases \$526 Thousand



Deer Island Maintenance

- Materials: \$4.82 million
 - 38% of the department's maintenance budget
- Services: \$7.98 million
 - 62% of the department's maintenance budget
- Deer Island maintenance decreases \$500 thousand
- Plant and machinery services and materials: \$8.68 million
 - Makes up 68% of all Deer Island maintenance expense
- Electrical system maintenance: \$2.06 million
- Cleaning and grounds work: \$1.34 million
- Some of the largest projects or contracts include:
 - Boiler maintenance: \$3.0 million combining
 - Boiler maintenance

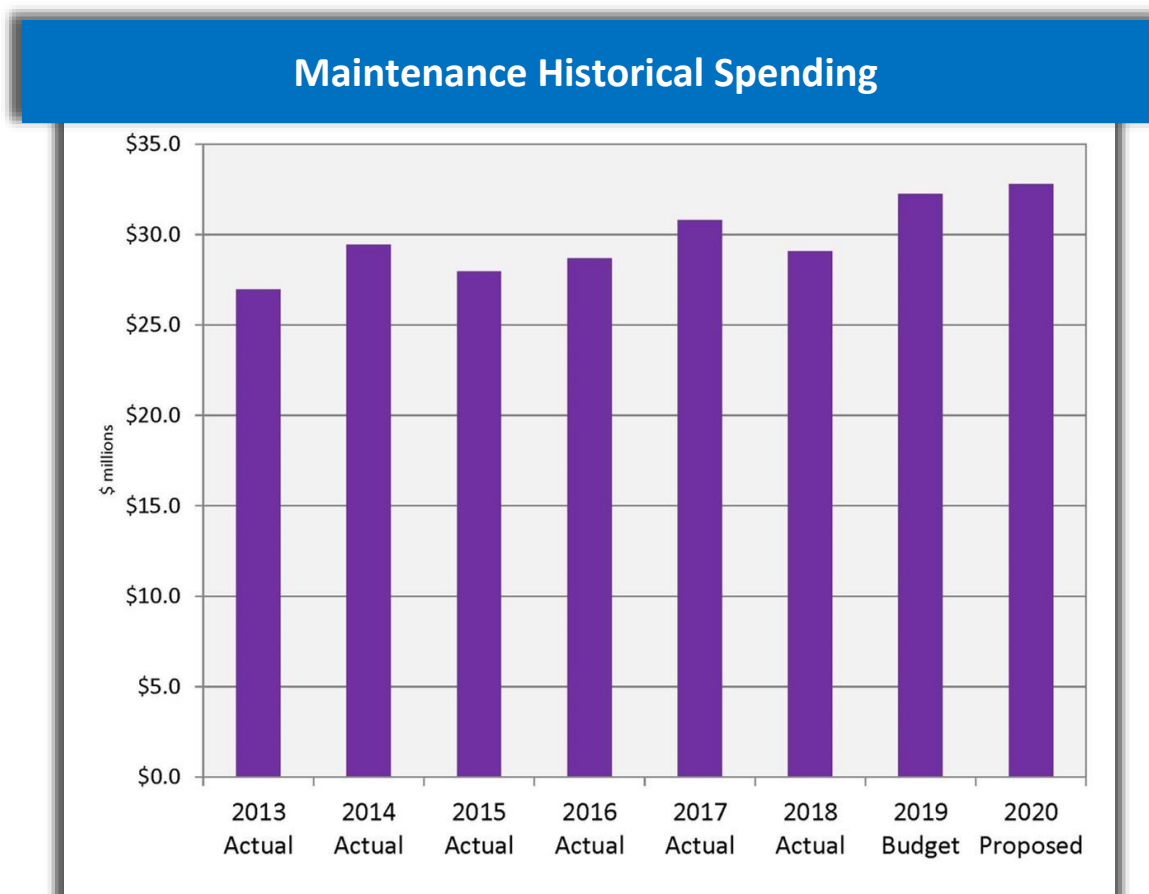
Deer Island Maintenance



- Hydro maintenance
- Steam turbine generator (STG) maintenance
- Cryogenic Maintenance Services: \$0.50 million
- Medium/Low Voltage Preventive Maintenance: \$0.48
- Janitorial Services: \$0.45 million
- PICS and HMI Support: \$0.43
- Combustion Turbine Generator (CTG) maintenance: \$0.34 million
- Pipe Cleaning: \$0.30 million

Field Operations Department (FOD) Maintenance Totals \$12.5 Million

- FOD maintenance spending increases by \$133 thousand (1.1%) from FY19
- Budget includes:
 - Day-to-day needs: \$5.1 million
 - Service contracts: \$4.4 million
 - Major projects: \$2.7 million
 - Energy initiatives: \$0.35 million
- Major projects include:
 - MIS Data Center HVAC Upgrade: \$0.40 million
 - Duct Cleaning at South System Pump Stations: \$0.38 million
 - Manhole Rehabilitation: \$0.33 million
 - Invasives Control: \$0.21 million
 - Tank Cleaning at Norumbega: \$0.15 million



Clinton Wastewater Treatment Plant (CWWTP) Maintenance Totals \$564 Thousand

- Increase from FY19: +\$26 thousand (+4.9%)
- Increase mainly due to paintings and coatings project
- Maintenance represents 21% of the FY20 proposed budget for CWWTP

Expected Changes for Final FY20 CEB

- The MWRA has informed the Advisory Board of some expected changes to the maintenance line item being included in the final FY20 CEB.
- Major decreases to the maintenance line item include:
 - Deer Island Plant Electrical Materials: -\$265 thousand
 - Reassessed project priorities
 - Metro Maintenance Building and Grounds Services: -\$154 thousand
 - Fire alarm maintenance contract shifted to Water Department
 - Residuals in Other Services: -\$150 thousand
 - Placeholder moved to Sludge Pelletization category
- Major increases to the maintenance line item:
 - Deer Island Plant Pipeline Services: +\$250 thousand
 - Plant and Machinery Materials: +\$200 thousand
 - Building and Grounds Services for Invasives Treatment: \$157 thousand

The Advisory Board expects the MWRA to decrease its “maintenance” category of expense by \$57,839 in the final FY20 CEB.

Maintenance Expense Changes by Type from FY18 to FY20



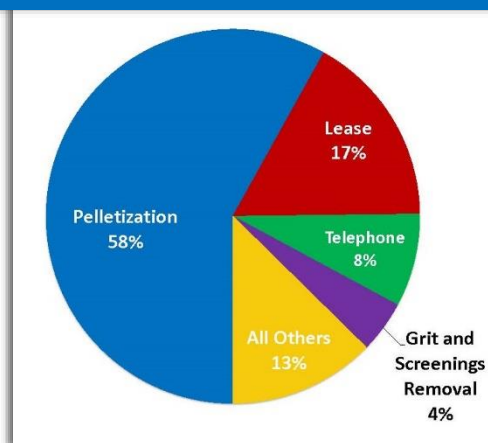
Other Services

Line Item/Description	Final FY19	Proposed FY20	Δ (\$s)	Δ (%)
Pelletization	\$13,292,288	\$13,898,212	\$605,924	4.6%
NEFCo contract to process and dispose of sludge pellets				
Lease	3,743,368	3,999,256	255,888	6.8%
Charlestown (\$1.9 million + taxes and operating expenses), Chelsea (\$2.0 million), Marlborough Records Center (\$40 thousand).				
Telephone	1,927,266	1,926,309	-957	-0.0%
Voice and data lines; Operations Division				
Grit and Screenings Removal	1,087,680	1,076,461	-11,219	-1.0%
Removal of grit and screened materials from various facilities.				
All Others	3,014,808	3,025,147	10,339	0.3%
Printing, membership dues/subscriptions, advertising; health/safety, police details; Advisory Board operations; various other services.				
TOTAL OTHER SERVICES EXPENSES	\$23,065,410	\$23,925,385	\$859,975	3.7%

Other Highlights

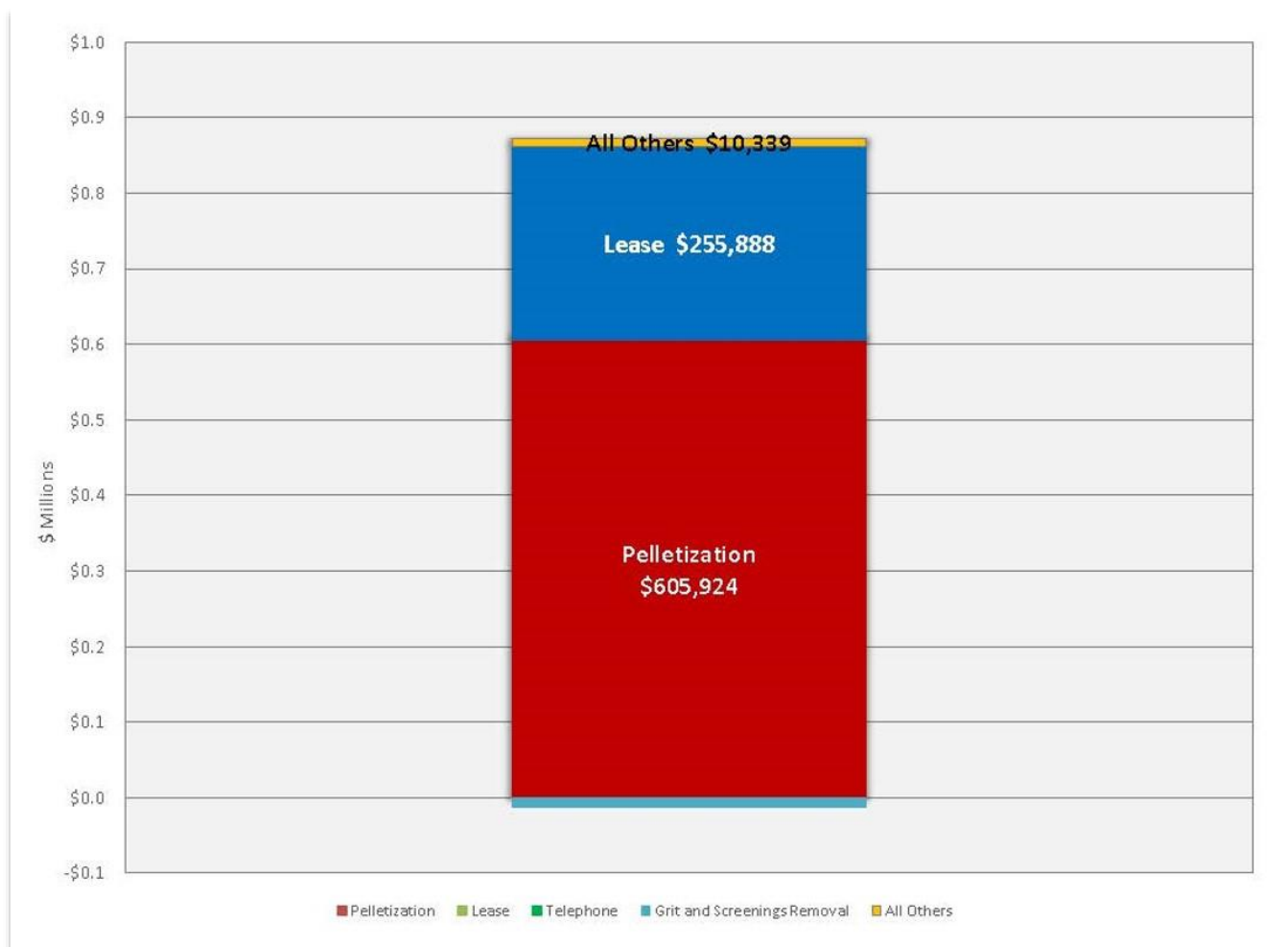
- Sludge pelletization and grit and screenings expenses total \$13.9 million or 58.0% of all Other Services expenses
 - New England Fertilizer Company (NEFCo) pelletizing operations costs are based on processing an average of 100.89 tons per day (based on a 3-year average), with annual costs updated by an inflation factor
- The pelletizing contract which ran from FY 2001 through December 2015 has been extended and renegotiated for a five-year period which began January 2016
- Grit and screenings (and scum) are removed from Deer Island, the remote headworks, certain pump stations, and CSO facilities. Budget estimates assume 5,828 tons of material to be removed
- Lease costs include costs for the Chelsea property, Charlestown lease and the Marlborough Records Center and Warehouse (including revised rent schedules, operating expenses and property taxes).

Other Services by Type



"DELTA REPORT"

Other Services Increase \$860 Thousand



Sludge Pelletization

- Increase from FY19: \$0.61 million (4.6%)
- No co-digestion impacts on sludge quantities are assumed in the Proposed FY20 CEB
- The inflation factor reflects assumptions for materials and labor, electricity and natural gas and has declined for this proposed budget

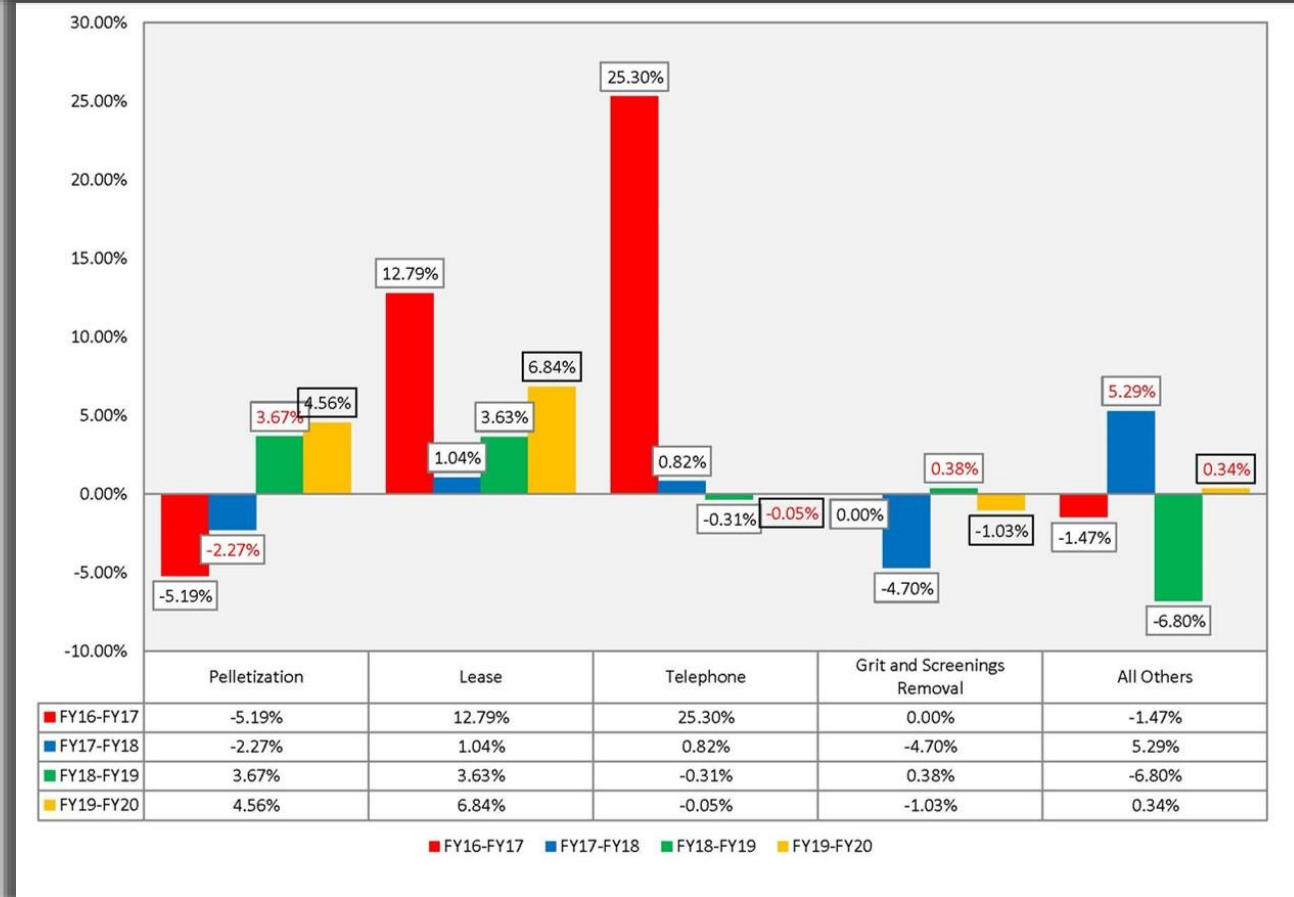
Grit and Screenings

- Decrease from FY19: \$11 thousand (1.0%)
- FY20 quantity estimate: 5,828 tons

Lease Costs

- Lease costs reflect increases in taxes and insurance charges for the Chelsea lease, and updated rent charges plus taxes and operating expenses for the Charlestown lease
- Rent, operating expenses and tax-related costs are also included for the Records Center and Warehouse located in Marlborough
 - Charlestown: \$1.98 million + taxes and operating expenses
 - Chelsea: \$2.01 million
 - Marlborough Records Center: \$40 thousand

Comparison of Allocation Changes Between Fiscal Years (%)



Other Services

- Telephone expense decreases 0.0% to \$2.0 million
- Printing expense increases 7.8% to \$218 thousand
- Other services also include memberships, dues and subscriptions; permit fees; and health and safety-related services

The Advisory Board expects the Authority will increase the "other services" category of expense by \$757,985 to account for an increase in residuals flows.

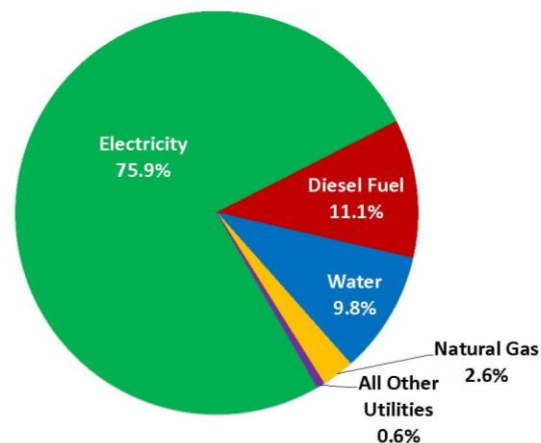
Utilities

Line Item/Description	Final FY19	Proposed FY20	Δ (\$s)	Δ (%)
Electricity Most facilities are powered by Electricity including DITP and CWTP	\$17,125,252	\$18,356,550	\$1,231,298	7.2%
Diesel Fuel Heating, CTGs at DITP, and other backup generators	2,700,820	2,690,363	-10,457	-0.4%
Water A "pass-through" cost to account for Water; self-supplied	2,319,432	2,378,979	59,547	2.6%
Natural Gas Primarily used for heating various MWRA facilities	584,818	630,089	45,271	7.7%
All Other Utilities Oxygen, #2 Fuel Heating Oil, Propane, and all Other Utilities	138,310	143,121	4,811	3.5%
TOTAL UTILITIES EXPENSES	\$22,868,632	\$24,199,102	\$1,330,470	5.8%

Other Highlights

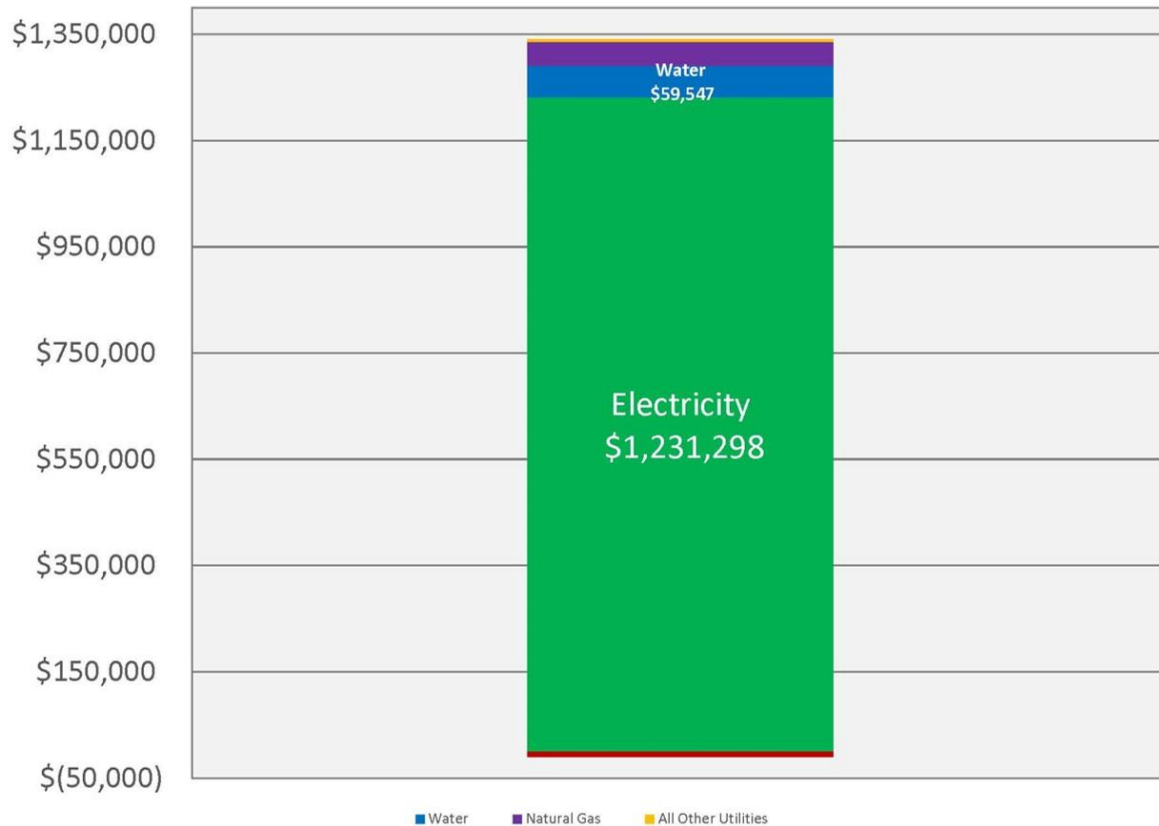
- Electricity expense increases due to an increase in pricing (a \$1.1 million increase from Deer Island alone) and small decrease in self-generation from renewable sources.
- Wind and solar energy generation, hydropower generation, use of steam generators at Deer Island, and improved energy efficiency continue to reduce the amount of purchased electricity over the last several years
- Electricity prices in New England are driven by natural gas pricing rather than oil prices
- Natural gas use at the Fore River pelletizing plant is part of the NEFCo monthly charge, under the Other Services budget category.
- Diesel prices decreased slightly, and account for 11.1% of the utilities budget.

Proposed FY20 Utilities by Type



"DELTA REPORT"

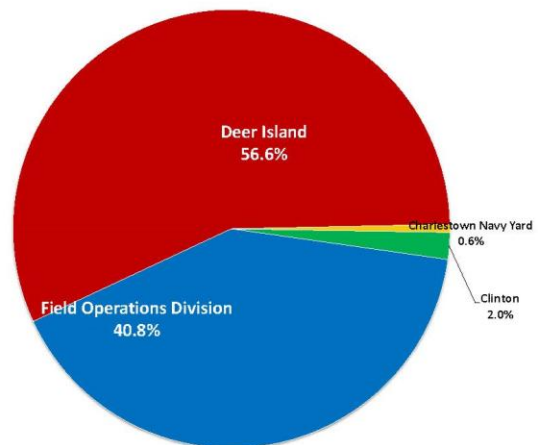
Utilities Spending Increases \$1.3 Million



Electricity

- FY20 Deer Island electricity: \$10.4 million
 - Increase from FY19: \$1.1 million
 - Deer Island electricity spending is 56.6% of all MWRA electricity purchases
- FY20 Deer Island electricity usage 145 million kWh, based off of five-year average
- Goal for total self-generation of electricity at Deer Island for FY20 is 28.23%.
 - Slight decrease due to one week lost to overhaul STG
 - Deer Island typically budgeted for 30% self-generated electricity
- Total purchased electricity at Deer Island based on three-year average
 - Energy conservation and efficiency projects also continue to bring purchased electricity amounts down
- The Authority continues to pursue a number of demand-side changes and initiatives

Proposed FY20 Electricity Expense



Diesel Fuel

- FY20 diesel fuel budget: \$2.7 million
 - Decrease of \$10 thousand
 - Deer Island: \$1.4 million
 - All other FOD facilities: \$1.3 million

Natural Gas

- FY20 natural gas expense: \$630.1 thousand
 - Increase from FY19: \$45 thousand
- Natural gas is used at a number of facilities in the Field Operations Department

Policy Point

Utilities Initiatives

“Combined Heat and Power Study”

It’s no secret that operations conducted at MWRA consumes a hefty amount of energy. And with this energy consumption comes a price. Just a small increase in pricing in energy contracts leads to a significant impact on the budget. For example, an approximate one cent per kWh increase in electricity pricing contributed to a \$1.1 million change for FY20 at Deer Island alone. As electricity comprises 76%, or \$18.4 million, of all utilities used at the Authority, initiatives to increase efficiency are of utmost importance and interest to ratepayers.

For this reason, the Combined Heat and Power (CHP) study is a most welcome project. At the March 2019 Board of Directors meeting, the \$1.15 million 15-month contract was approved with the goal of evaluating existing infrastructure at Deer Island and recommending alternatives to further increase efficiency.

In the most simplified sense, CHP uses gas produced from sludge digesters and cycles it through steam turbine generators (STGs) to produce energy. The current CHP electrical efficiency is 10%, and the study aims to improve upon this rate. Currently, 27% of electricity at Deer Island derives from renewable energy sources, including STGs, which make up 22% of electricity. Other renewable sources include hydropower, wind, and solar.

Investment in the CHP study represents the MWRA’s commitment to smart energy consumption with an eye towards both sustainability and affordability. The Advisory Board commends the Authority for embracing thoughtful strategies for energy use, especially as the utilities line item remains a consistently major spending category from year to year. One possibility we would encourage the Authority to consider is using some of the gains produced by greater CHP efficient to fund symbolic lights on the Deer Island digesters (please see the [FY19 Comments and Recommendations](#)). We are looking forward to the recommended alternatives produced by the study to see how the Authority can further decrease its energy needs.

Being made aware of pricing and usage trends, the Advisory Board expects the Authority to increase its FY20 CEB “utilities” expenses by an estimated \$255,664.

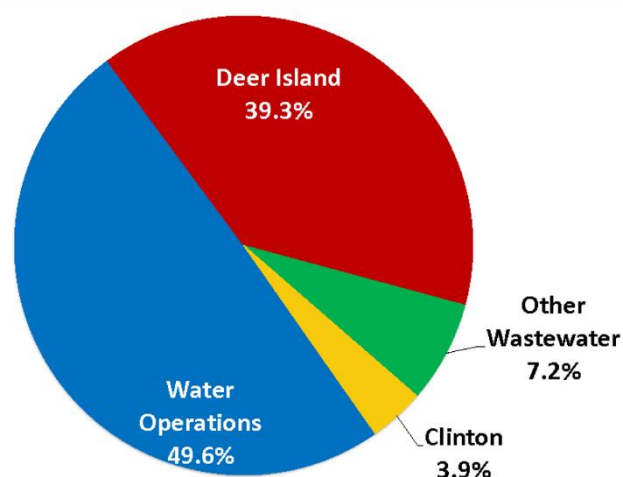
Chemicals

Line Item/Description	Final FY19	Proposed FY20	Δ (\$s)	Δ (%)
Soda Ash Used primarily at the CWTP; some at Clinton WWTP	\$3,648,100	\$3,558,682	-\$89,418	-2.5%
Sodium Hypochlorite Used for treatment at DITP and CWTP	2,662,075	3,222,806	560,731	21.1%
Ferric/Ferrous Chloride For struvite control at DITP	1,401,002	1,726,537	325,535	23.2%
Liquid Oxygen Ozone generation at CWTP	370,452	369,608	-844	-0.2%
Sodium Bisulfite For dechlorination of treated wastewater and water	238,640	254,613	15,973	6.7%
Hydrofluosilic Acid Fluoride control at CWTP	235,771	275,326	39,555	16.8%
Polymer Sludge thickening at DITP and Clinton	385,408	448,263	62,855	16.3%
Activated Carbon For odor control at DITP and Nut Island	341,055	667,480	326,425	95.7%
Carbon Dioxide To increase pH and alkalinity level of water supply at CWTP	306,990	306,735	-255	-0.1%
All Other Chemicals For algae control; corrosion control in Framingham Relief Sewer and DITP	1,240,958	1,257,480	16,522	1.3%
TOTAL CHEMICALS EXPENSES	\$10,830,451	\$12,087,530	\$1,257,079	11.6%

Other Highlights

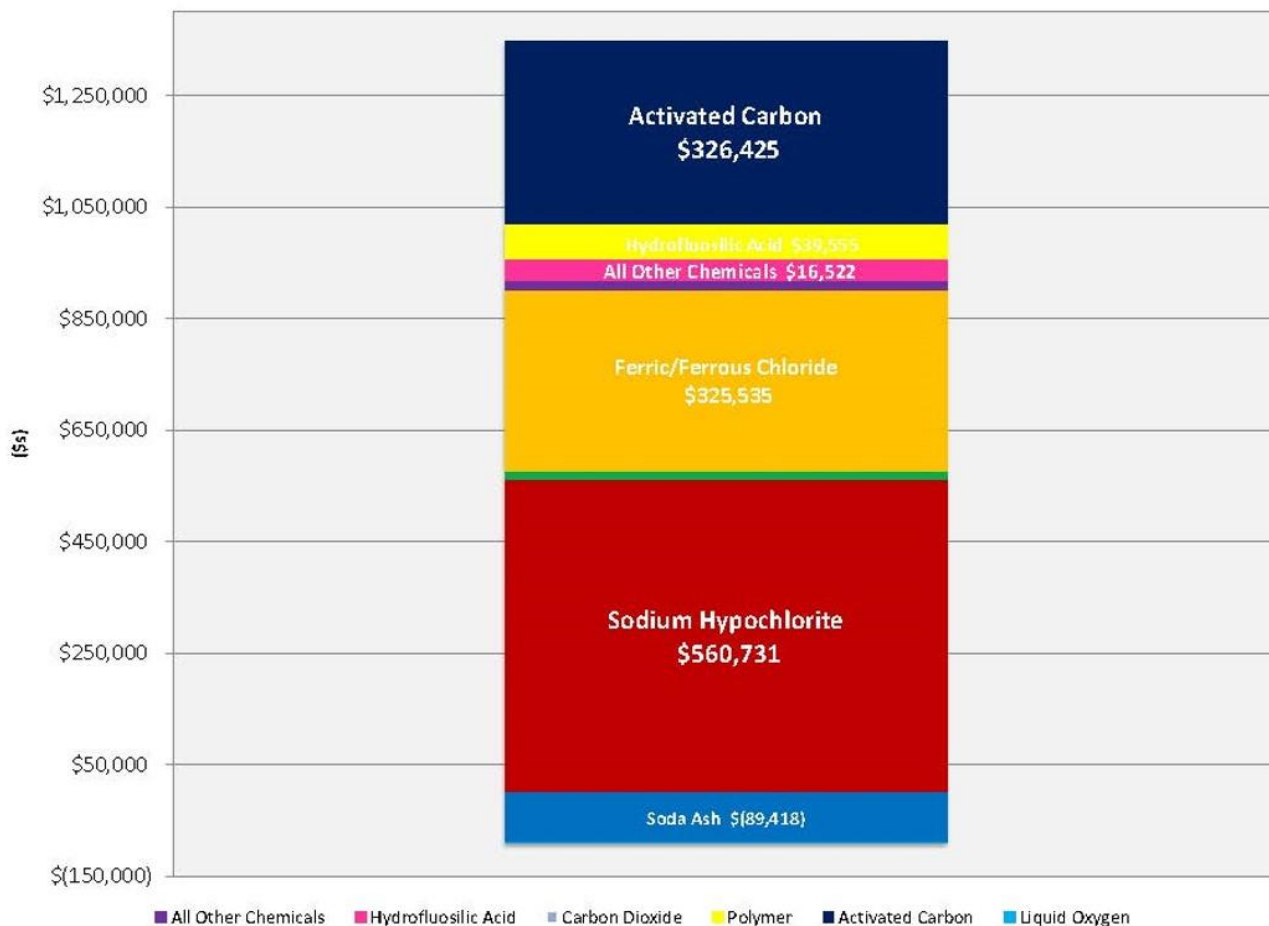
- Chemicals budget totals \$12.1 million or 4.9% of all direct expenses
- Water operations chemicals: \$6.0 million
 - Slight increase due to pricing
- DITP chemicals: \$4.7 million
 - Increase of \$620 thousand (15%)
- Does not assume a new NPDES permit for FY20, and therefore no additional chemicals for Enterococcus treatment are requested
- Clinton wastewater treatment plant chemicals: \$0.47 million
 - Increase of \$61 thousand (14.9%)
 - Phosphorus reduction facility now operating year round
- Other wastewater facilities chemicals: \$0.87 million

Chemicals by Department



“Delta Report”

Chemicals Spending Increases \$1.3 Million



Chemicals Changes by Location

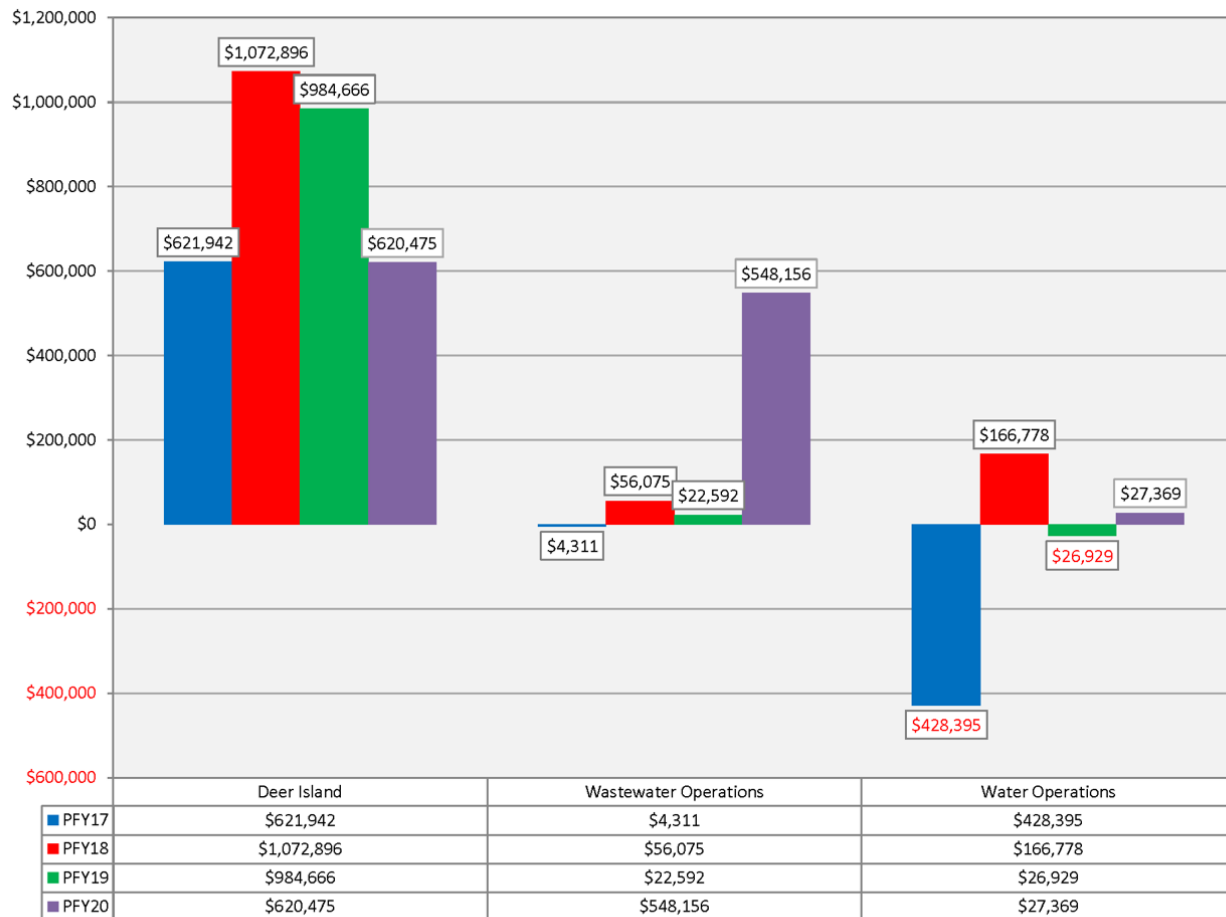
- Water operations chemicals are essentially level-funded from FY19
- 52% (or \$6.30 million) of all chemicals spending is for soda ash and sodium hypochlorite

Major Expected Changes to Chemicals

- Carroll Water Treatment Plant Sodium Hypochlorite: **-\$135.4 thousand**
 - New contract price received
- Activated Carbon for Odor Control: **-\$124.0 thousand**
 - Revised usage estimates

The Advisory Board expects that the MWRA will decrease the “chemicals” category of expense by \$276,308 to reflect updated pricing and usage assumptions.

Chemical Changes by Location from FY17 to FY20

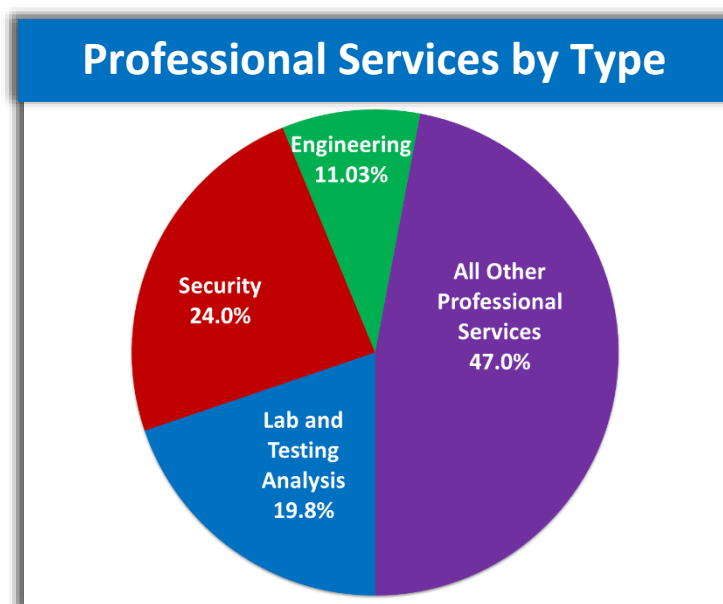


Professional Services

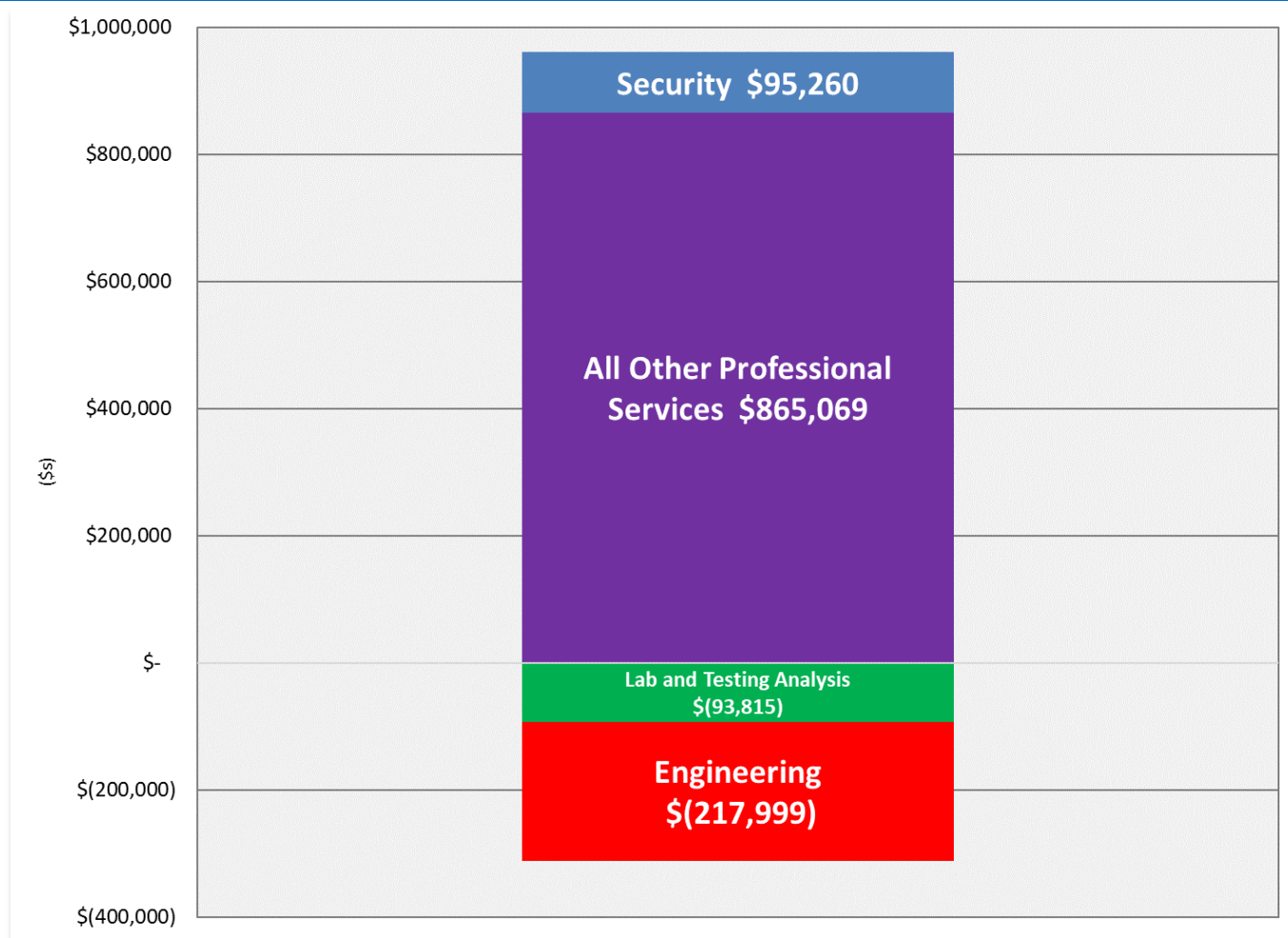
Line Item/Description	Final FY19	Proposed FY20	Δ (\$s)	Δ (%)
Lab and Testing Analysis	\$1,740,912	\$1,647,097	-\$93,815	-5.4%
Primarily harbor and outfall monitoring; some specialized outside lab services				
Security	1,903,440	1,998,700	95,260	5.00%
Security and guard contracts				
Engineering	982,000	764,001	-217,999	-22.2%
Specialized outside services such as dam inspection and dam safety services; as needed engineering support				
All Other Professional Services	3,049,624	3,914,693	865,069	28.4%
Legal Services, Audit Services, Local Limits Study, communications, energy audits				
TOTAL PROFESSIONAL SERVICES EXPENSES	\$7,675,976	\$8,324,491	\$648,515	8.4%

Other Highlights

- Security services costs reflect contract costs for the Chelsea, Deer Island, Carroll Water Treatment Plant facilities, and the Charlestown offices
- All other professional services include:
 - Trustee, financial advisor, and related services for the Treasury Department
 - Insurance consultant services
 - Audit services
 - Legal services
 - Energy consulting services
 - Technical and professional development services for the Human Resources Department plus services relating to the employee assistance program and third party claims administration services for the workers' compensation program
 - MIS services relating to the upgrade of the MAXIMO system
 - Communications services, including funding for WAC and WSCAC
 - Other engineering services includes funding for a comprehensive survey in all the reservoirs for invasive plants



“Delta Report” Professional Services Expense Increases \$648 Thousand



Laboratory, Testing, and Analysis Services

- FY20 harbor and outfall monitoring support: \$1.6 million for water column and water quality modeling and monitoring in the harbor and Massachusetts Bay; the proposed budget is based on a three-year average
- Largest area of expense within laboratory testing category
- Monitoring costs linked to existing National Pollutant Discharge Elimination System (NPDES) permit
- Current permit expired in August 2005
- New permit actively being drafted but not yet released for review.
- FY20 expense is 5.4% lower than FY19.

Other Engineering Services Expenses

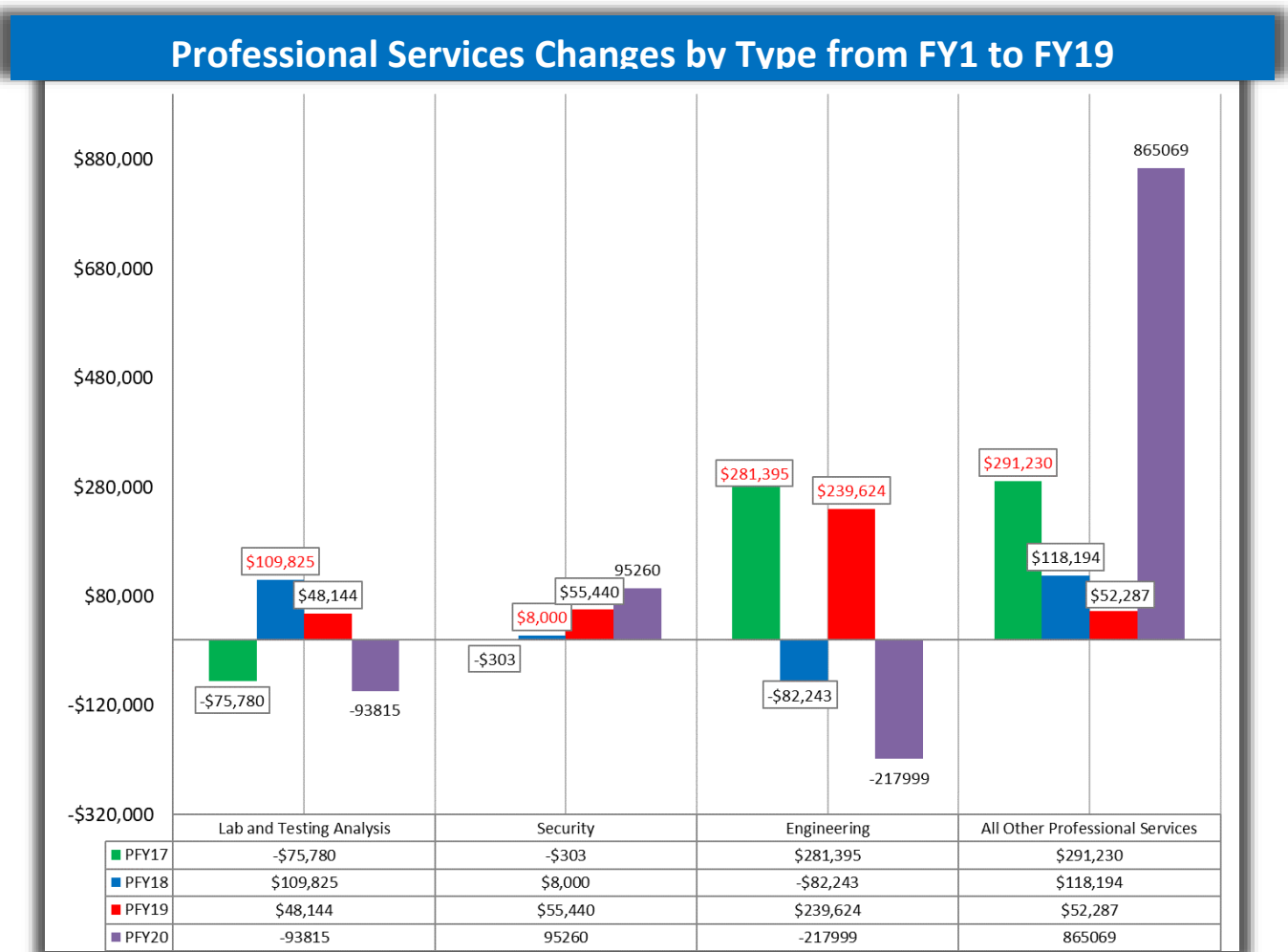
- FY20 expense is 22.2% lower than FY19.

Security Services

- Budgeted at \$1.9 million, a 5.0% increase from FY19
- Includes funding for security and related services for the Deer Island Treatment Plant, Carroll Water Treatment Plant and the Charlestown Navy Yard offices for the second year of the contract

All Other Professional Services

- FY20 expense of \$3.9 million is 28.4 % higher than FY19. Increases include:
 - Computer Systems Consultant in the MIS Department, which includes a two year extension to the MSSP contract for monitoring



The Advisory Board expects the MWRA to decrease of the “other materials” category of expense by \$319,461 in its final budget.

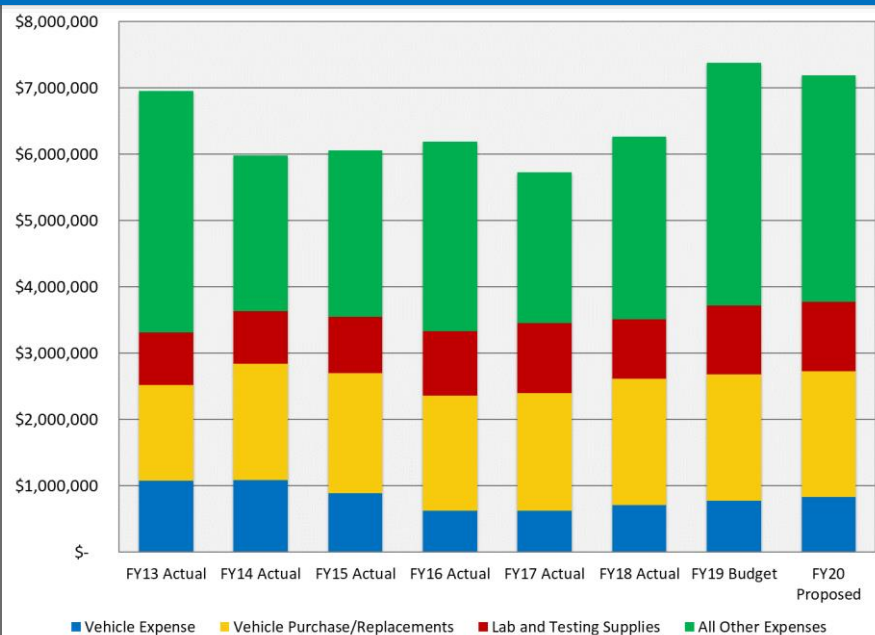
Other Materials

Line Item/Description	Final FY19	Proposed FY20	Δ (\$s)	Δ (%)
Vehicle Purchase/Replacements	1,900,000	1,900,000	0	0.0%
Purchases of vehicles and equipment under \$100,000.				
Vehicle Expense	\$777,731	\$830,236	\$52,505	6.8%
Bulk gasoline, diesel purchases, mileage reimbursement, and some toll fees.				
Lab and Testing Supplies	904,309	1,042,851	138,542	15.3%
Supports Central Lab and TRAC.				
Equipment/Furniture	757,173	575,740	-181,433	-24.0%
Miscellaneous equipment and furniture.				
Computer Hardware & Software	1,424,674	1,176,445	-248,229	-17.4%
PCs, printers, plotters, and scanners.				
Office Supplies	255,794	279,715	23,921	9.4%
Office supplies including paper.				
All Others	1,361,418	1,381,713	20,295	1.5%
Includes postage, work clothes, and health and safety materials.				
TOTAL OTHER MATERIALS EXPENSES	\$7,381,099	\$7,186,700	-\$194,399	-2.6%

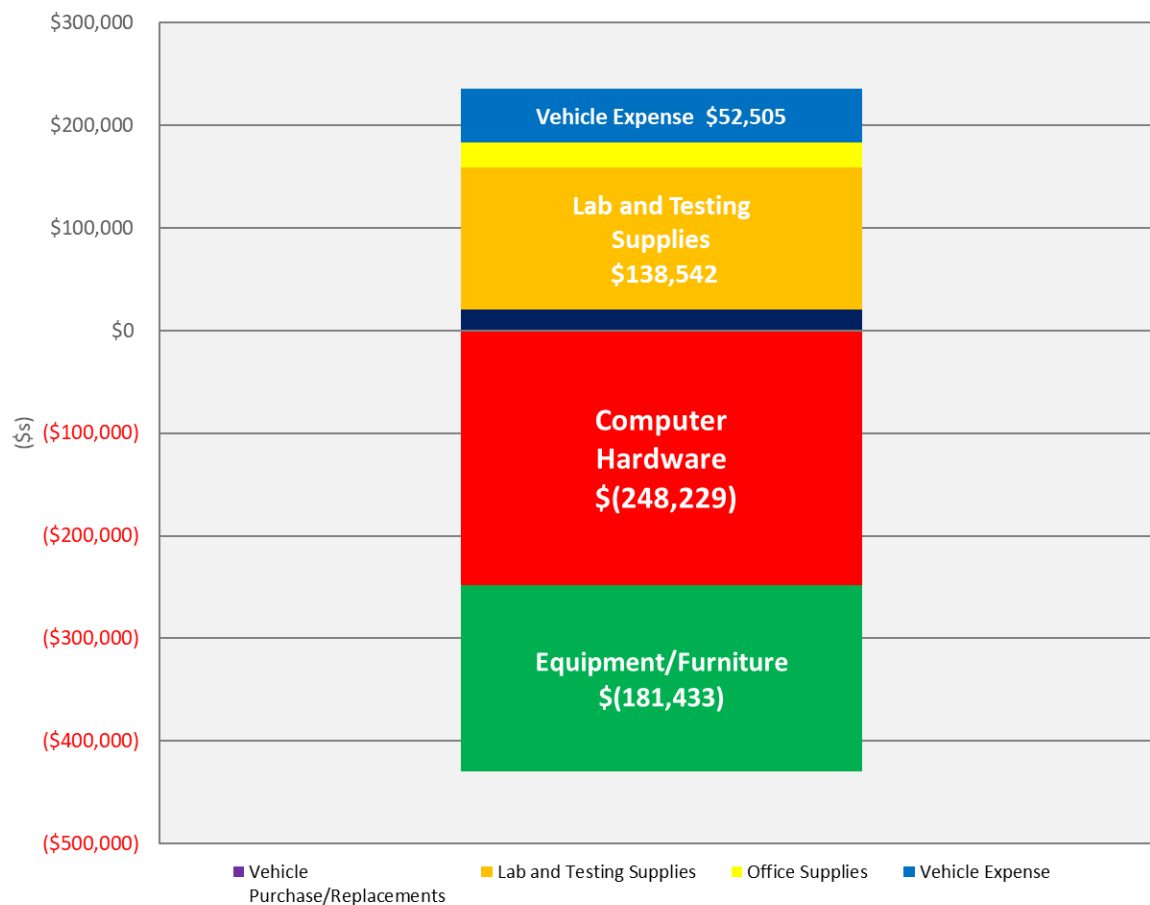
Other Highlights

- Funding for vehicle replacement supports purchase of 54-63 vehicles or 11-12% of the active fleet
- Upgrading to Windows 10 in FY20 will require replacing most of the MWRA's PCs
- Vehicle expense, lab and testing supplies, and work clothes budgets are based on updated historical spending

Other Materials Historical Spending



“Delta Report” Other Materials Spending Decreases \$194 Thousand



Computer Hardware and Software Purchases

- The computer hardware budget decreased by \$298.2 thousand (-21.4%)
 - FY19 increase, by 57%, largely driven by need to replace almost all PCs in the agency due to an upgrade to Windows 10 operating system
 - Project rollout delayed into FY20
- Findings of the five-year Information Technology (IT) strategic plan (completed in 2012) include the need to:
 - Adopt more effective and standardized IT management and processes
 - Develop methods to share data quickly across multiple applications
 - Develop streamlined work flows
 - Reduce reliance on paper records and improve access to information
- Because technology evolves so rapidly, the Authority will have to continuously adapt its plans to accommodate changes and updates to its programs and software

Vehicle Purchases

- Vehicle purchase line is level-funded at \$1.9 million
- Vehicle fleet size is reviewed regularly

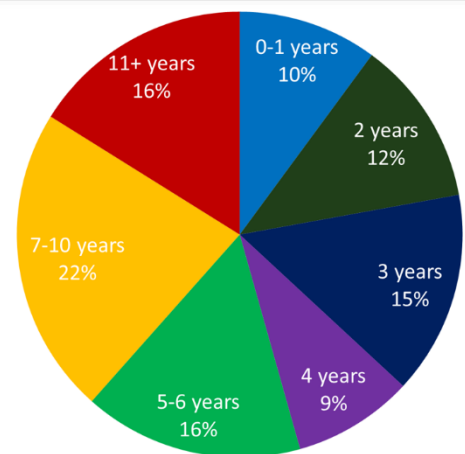
Vehicle Expense

- The Authority continues to reduce fuel consumption by reducing idle times and increasing the number of vehicles powered by fuel other than gasoline and diesel. The Authority procures bulk fuels from state contracts
- The Authority has instituted an Automated Vehicle Locator (AVL) program, which has also resulted in reduced fuel consumption
- About 15% of the fleet is powered by fuels other than gasoline and diesel
- The Authority has also reduced the number of domiciled vehicles and increased the use of pooled vehicles, increasing the useful life of the vehicles
- Vehicles at the end of their useful lives for the agency are sold as surplus, resulting in increased income

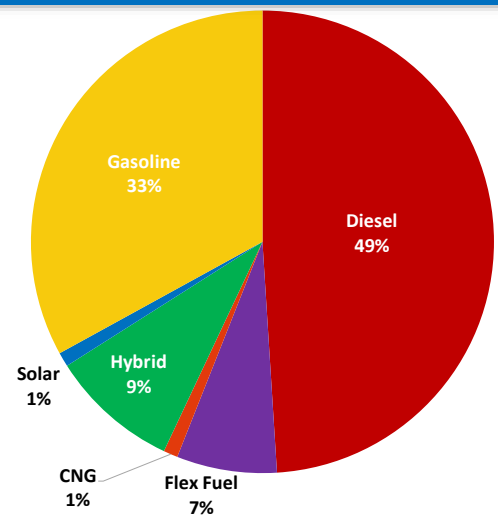
Equipment/Furniture

- Equipment/furniture decreases by \$181.4 thousand (24.0%)
 - EnQual Department has initiatives requiring large purchases of equipment

MWRA Vehicles by Age



MWRA Vehicles by Fuel Type



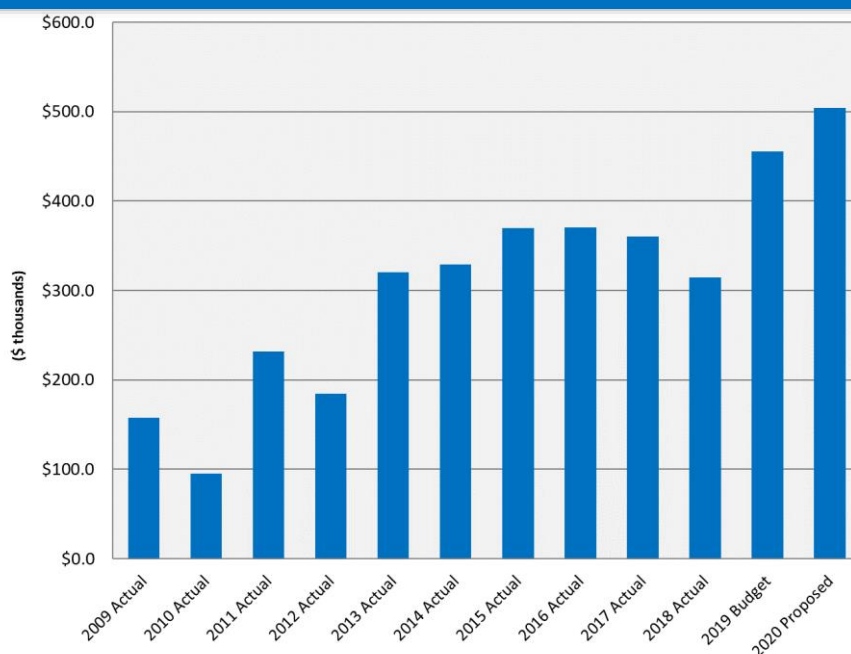
Training and Meetings

Line Item/Description	Final FY19	Proposed FY20	Δ (\$)	Δ (%)
Training and Meetings	\$455,770	\$504,394	\$48,624	10.7%
TOTAL TRAINING AND MEETINGS EXPENSES	\$455,770	\$504,394	\$48,624	10.7%

Other Highlights

- Costs cover a variety of meetings, seminars, conferences and training sessions. Most spending supports maintaining professional licenses and certifications, as well as training in the use of specialized equipment, out-of-state site visits (such as water treatment plants that use UV disinfection) and site audits, and health and safety compliance, as well as cyber security training
- Increase from FY19: - \$48.6 thousand (10.7%)
- The Authority also budgets nearly \$358 thousand for professional development and technical training under professional services in the Human Resources Department.

Training and Meetings Historical Spending

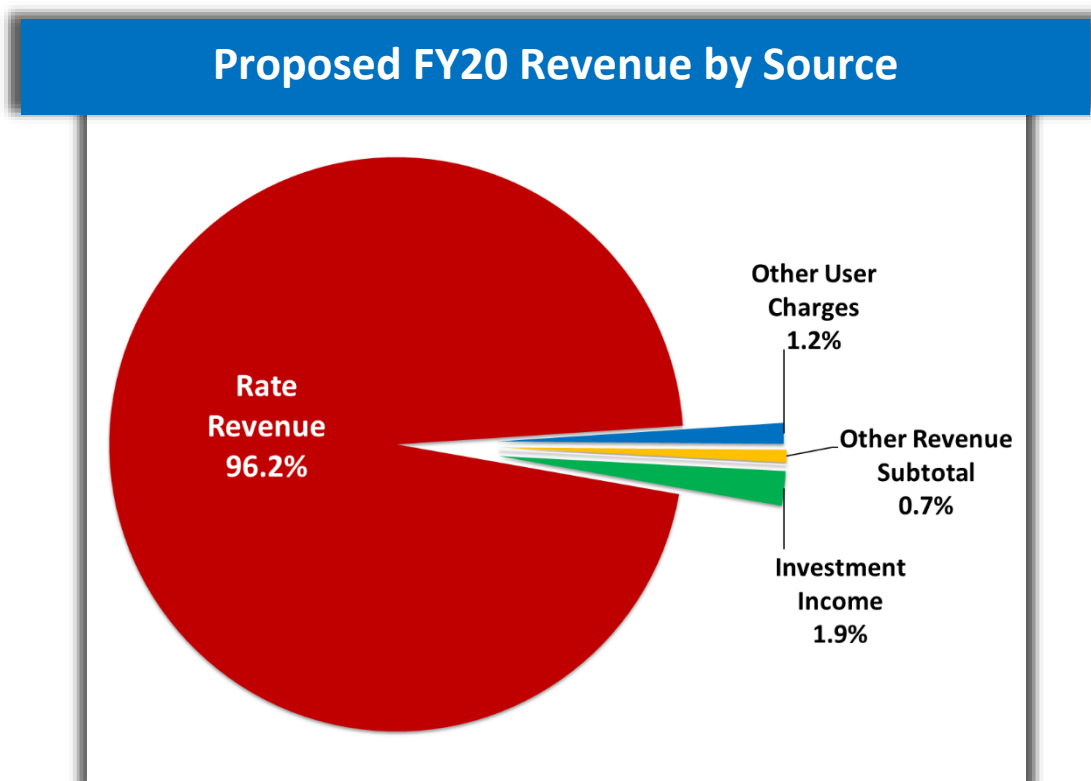


Revenue

Line Item/Description	Final FY19	Proposed FY20	Δ (\$s)	Δ (%)
Rate Revenue	\$739,042,200	\$766,657,500	\$27,615,300	3.7%
Revenue generated directly from member communities through annual assessments.				
Other User Charges	3,180,373	9,239,263	6,058,890	190.5%
From 20 customers including CVA communities; emergency water supply connections, and entrance fees.				
Other Revenue	6,013,635	5,630,637	-382,998	-6.4%
Includes forestry product sales, fishing, and hunting licenses				
Rate Stabilization	0	0	0	-
From rate stabilization fund.				
Investment Income	13,559,110	15,503,974	1,944,864	14.3%
Interest on both short- and long-term investments.				
TOTAL REVENUES	\$761,795,318	\$797,031,374	\$35,236,056	4.6%

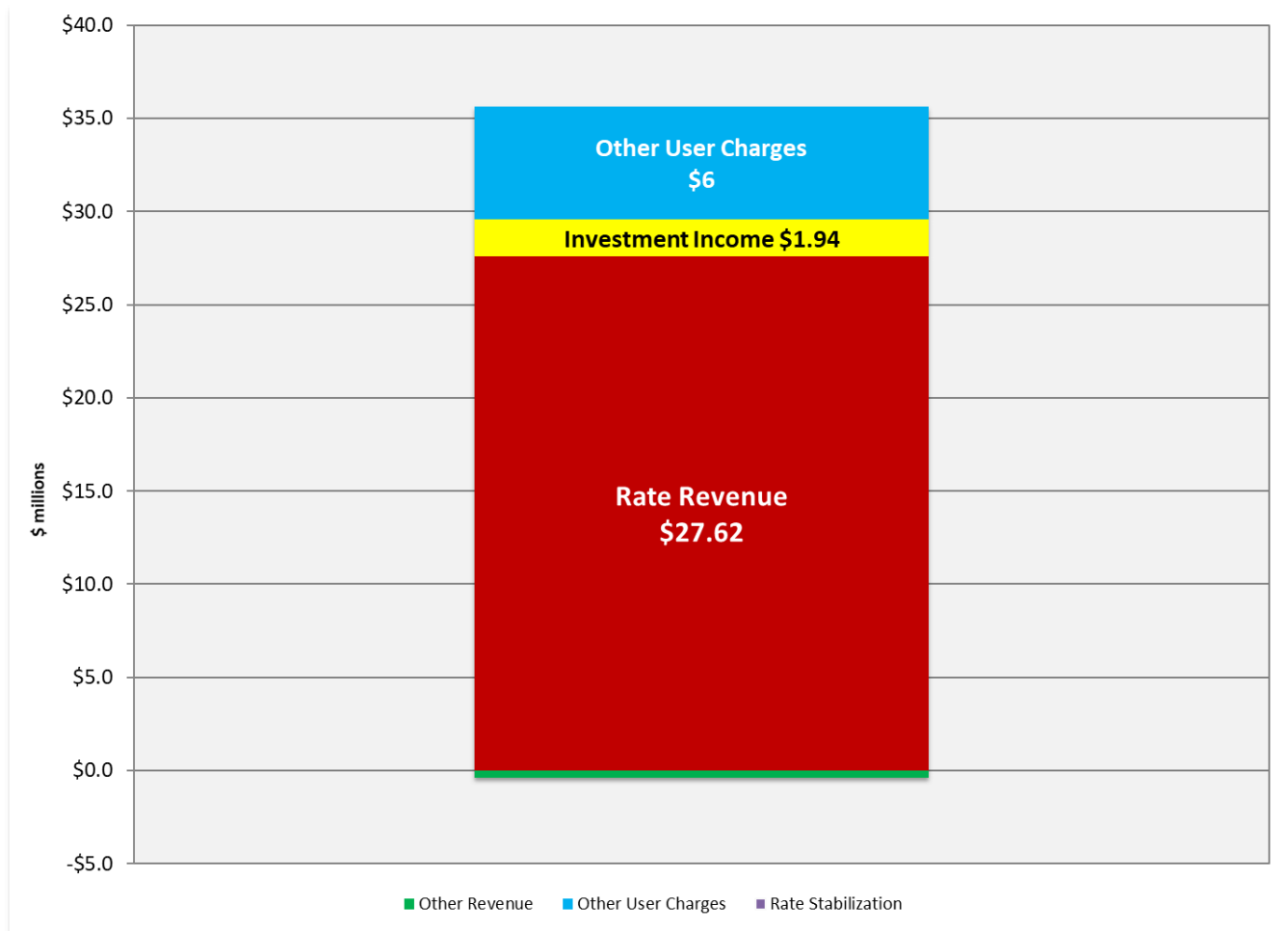
Other Highlights

- Proposed FY20 rate revenue increase: +\$27.6 million (3.74%)
- Non-rate revenue increase: +\$1.5 million
- Other revenue from forestry product sales, fishing, and hunting licenses is credited to the Office of Watershed Management budget.



“Delta Report”

Revenue Increases \$29.6 Million



Non-Rate Revenue

- FY20 proposed non-rate revenue: \$30.4 million (+4.7%)
 - Other User Charges decrease: **-\$90 thousand (-1.0%)**
 - Other Revenue decrease: **-\$383 thousand (-6.4%)**
 - Investment Income increase: \$1.9 million (+14.3%)

Other User Charges		
User	Charge	Notes
Fernald School	\$0	Individual users of sewer system
Commonwealth Zoological (State Zoo)	\$47,926	
Westborough State Hospital	\$28,329	
DCR Pools/Parks	\$31,950	
Regis College	\$75,279	
DCR Blue Hills Ski Area	\$50,148	
NE Center for Children	\$20,845	
Lancaster	\$380,633	Income relating to Clinton Wastewater Treatment Plant costs
Worcester	\$207,905	
Clinton	\$500,000	
Chicopee	\$3,612,064	CVA Communities
Wilbraham	\$817,850	
South Hadley	\$725,197	
WTP Residuals	\$279,171	From nine water treatment plants
Entrance Fees	\$615,154	Stoughton, Wilmington & Dedham-Westwood
Deer Island	\$1,846,812	Transfer payment of sewer cost to water revenue
TOTAL	\$9,239,262	

Other Revenue			
Category	Budget FY19	Proposed FY20	Description
Hydropower Revenue	\$135,497	\$127,249	Energy-related revenue
Wind Turbines Revenue	\$405,423	\$346,618	
Solar Power Revenue	\$97,729	\$99,109	
Renewable Portfolio Credits	\$773,204	\$418,664	
Load Reduction & Forward Capacity	\$1,447,204	\$1,066,833	
Utility Rebates for Equipment	\$100,000	\$100,000	
Permit Fees	\$2,100,000	\$2,340,480	
Penalties	\$100,000	\$50,000	TRAC permit and monitoring fees.
Payments from Commonwealth	\$0	\$0	Issued through the TRAC program.
Miscellaneous Revenue	\$1,076,663	\$1,081,585	For chemical costs via statute. Includes revenue from Fore River Railroad, antenna licenses, and other miscellaneous revenues.
TOTAL	\$ 6,235,720	\$ 5,630,538	

Policy Point

TRAC Permit Fees

“Getting the Fee Structure Back on TRAC”

The Toxic Reduction and Control (TRAC) program monitors and regulates the wastewater discharges of some industrial users within the MWRA sewer service area. While the program generates revenue from the permitting process and any issued penalty fees, the process is not sized for complete cost recovery of the program. The program was designed with this partial cost recovery method in mind.

However, this “partial cost recovery” has not been able to keep up with other costs of the program as TRAC fees have not increased since FY12. The MWRA had discussed permit fee levels internally a few years ago, but due to economic conditions decided to forego increases at that time. The Advisory Board has recommended revisiting TRAC fees for several years now to address this gap. Recently, over the course of FY19, TRAC Director Rebecca Weidman led an effort to propose amendments to the regulations governing TRAC and thus address the Advisory Board’s concerns. The Advisory Board appreciates and is encouraged by MWRA’s proposed changes, especially as it relates to updates to the incentive program charges.

We realize that the goal of the program is compliance and to ensure that wastewater entering MWRA’s system meets all requirements. Revenue generated from fees is not meant to recover all costs. However, the fees have not increased for seven years, while the cost of wastewater treatment has.

The proposed changes to the incentive program charges – 4% increase in FY20 followed by 3% increases each year in FY21-FY24 – will better reflect the rising cost of wastewater treatment. Permit holders can expect “sustainable and predictable” rate increases, similar in fashion to the communities served by the MWRA and represented by the Advisory Board. Along with the additional revenue from the dental discharge permit and a plan to bill permit holders annually instead of every five years, these changes are better suited to help recover revenue to support the TRAC program as other costs increase. The proposed increases also serve to recover costs from the years when incentive program charges experienced no increase.

We thank the TRAC team for responding to our Comments and Recommendations and continued advocacy on this issue by making this fee adjustment and we are in full support of the proposed amendments.

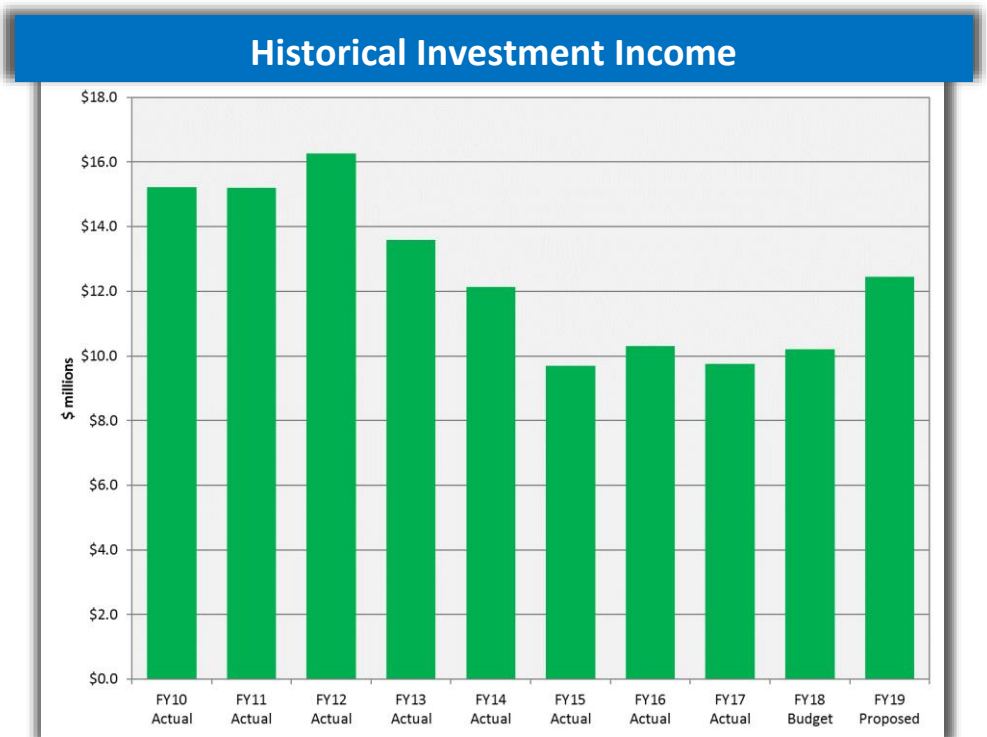
The Advisory Board thanks the MWRA staff for meeting the FY19 recommendation that TRAC fees should be updated with an automatic escalator to make fee increases sustainable and predictable for the permittees for FY20-24.

Investment Income

- FY15 and FY17 are the only years that investment income were below \$10 million since before FY90 when the Authority first issued its own debt. These historically low levels were due to:
 - Lower average balances in both short-term and long-term investments
 - Lower average fund balances in the construction fund
 - FY20 proposed investment income: \$15.5 million
 - Increase from FY19: +\$1.9 million (+14.3%)
 - Due to recent increases in short-term interest rates, the Authority has increased its short-term interest rate assumptions

Debt Service Assistance

- Debt Service Assistance (DSA), when available, is treated as an offset to debt service
- No DSA was assumed in the proposed FY20 CEB
- Since 2004, the Authority has received 79% of the statewide DSA funds available
- In FY19 DSA was funded at a statewide level of \$1.1 million
- The MWRA received its share of DSA in the spring of FY19 totaling \$890,235



In keeping with the policy advocated by the Advisory Board to “Pay It Forward” to the next budget year, the Advisory recommends that \$890,235 be used to directly reduce the rate revenue requirement for FY20.

Long-Term Rates Management

"2.4 by '24"

In Brief

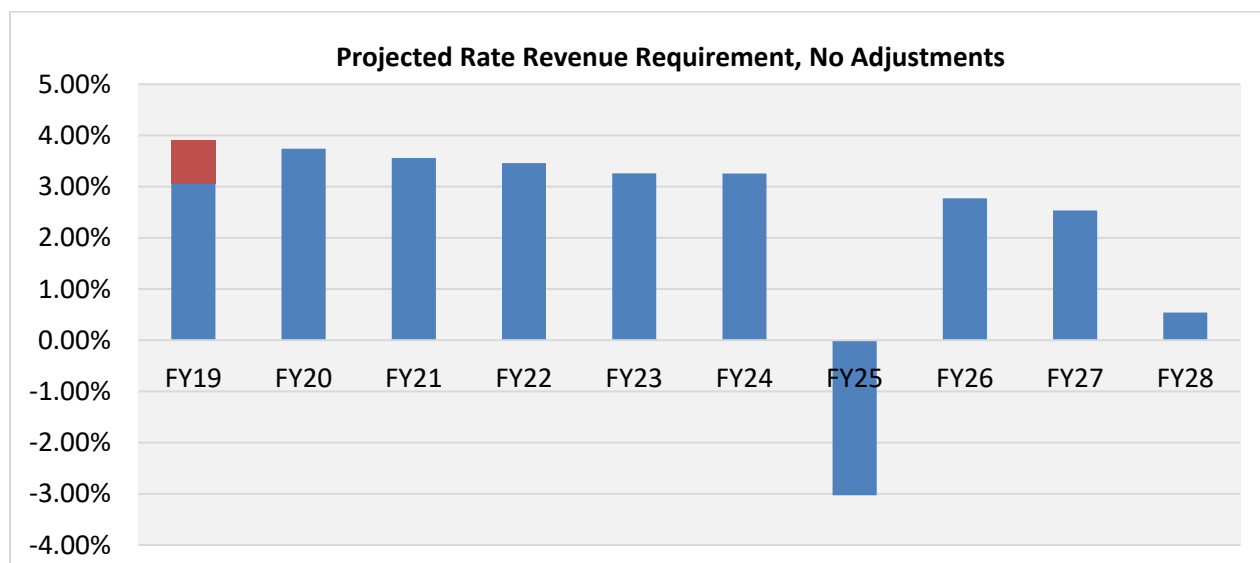
The Authority has met the Advisory Board's previous rates goal for over 5 years in a row now ("Four No More" – meaning no more rate increases over 4.0% over again). In FY20, the Advisory Board continues a rates challenge that was introduced in our FY19 Comments and Recommendations known as "2.4 by '24": reduce rate increases in FY20-23 to below 3.25% and achieve flat 2.4% rate increases by FY 2024.

In Depth

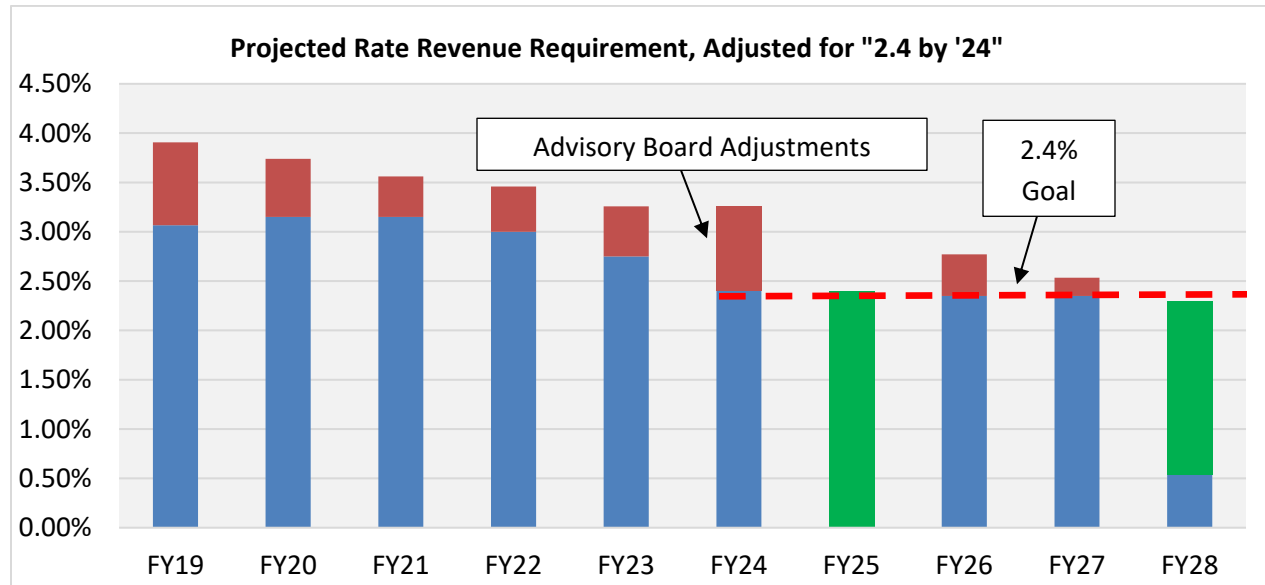
When the Advisory Board previously issued the challenge "Four No More", the Authority worked diligently and achieved the goal of keeping rate increases below 4%. By using several tools – defeasance and optional debt prepayment among them – the Authority was able to capitalize on favorable budget performance over the past few years to set up success in the coming years. This means fulfilling its organizational objectives without overreliance on increases to the rate revenue requirement.

After achieving "Four No More" for a number of years, the Advisory Board did away with this effective mantra with "Four No More – No More" in the FY18 Comments and Recommendations, reiterating that "Four No More" was simply meant to set a "not-to-exceed" limit of year-over-year rate increases, but that the Authority should continue to look critically at their reliance on ratepayer dollars. As stated, this led to the FY19 recommendation of "2.4 by '24" which will be continued until completion.

The next five years (FY20-24) feature rate increases in the high 3% range; FY25 appears to be a rate **decrease** followed by smaller rate increases from FY26-27. The takeaway from this image is that the challenging years – from a rate increase perspective – are between FY20-24. Moreover, how these years are handled will set the stage for the five years after.



During its review, the Advisory Board explored whether there was a way to “save it forward,” meaning was there a way to use the available tools to provide rate relief for communities in the early, more challenging years while preparing for the years beyond. Here we will demonstrate the approach we took to achieve moderate rate increases from FY20-24 and to hold rate increases from FY24 and beyond at 2.4%. It is important to note that our scenario does not change any assumptions in the Authority’s projections – including future interest rates, inflation rates, future surpluses or defeasances – beyond those specifically mentioned. If any of these assumptions were made less conservative, it could make attaining this goal even easier.



The Advisory Board recommends that the Authority work toward a target of 2.4% rate increases by the year 2024.

In Conclusion

Having walked through the details of our proposal and learned the specifics of both the challenges and the tools, let’s review the basics of the approach:

1. The next five years (FY20-24) are some of the most challenging, with the highest levels of rate increases of the 10-year projections
2. There cannot be a rate decrease in FY25 as projected, so a strategy must be used to achieve sustainable and predictable rate increases in these years
3. Lowering spending and rate revenue requirements in FY20-24 helps with this strategy to manage the negative rate change
4. Removing the optional debt prepayments and strategically using rate stabilization could reduce rates below 3.5% from FY20-24
5. Using the “capacity” of the negative rate change years, rate stabilization funds used can be restored, and optional debt prepayments reinstituted in FY24.
6. Rate increases under this scenario level at 2.4% from FY24 forward

A few final notes and caveats are warranted. First, our scenario is just that – one scenario of many that could potentially achieve the same result. Second, we do not make any changes to the Authority’s assumptions in the projections except

for those mentioned above. We do not assume any future surpluses or impacts of any defeasances beyond those already embedded in the projections. We mention this to emphasize that there are many other tools beyond those we used to achieve the end goal.

Wastewater Primacy

“Still in the Minority”

The Advisory Board continues to advocate for Massachusetts to obtain delegated authority, or primacy, over NPDES permits. Massachusetts remains one of four states that must obtain water quality permits from the EPA directly, rather than through a state agency (i.e. the Massachusetts Department of Environmental Protection, or MassDEP); the other three states being Idaho, New Hampshire, and New Mexico.

Primacy would allow Massachusetts communities to work with MassDEP to achieve compliance as written in the permits, a decided advantage as MassDEP is more attuned to the needs of Massachusetts municipalities.

Devising a funding strategy remains a significant hurdle to state primacy implementation, however. Over the past few years, the Advisory Board has met with the State Auditor and Conservation Law Foundation to try to find common ground and aid in the process of achieving state primacy. Unfortunately, the issue did not gain traction in the legislature and the measure was unsuccessful. The Advisory Board will continue to prioritize primacy, particularly as MS4 permits for stormwater are coming into effect.

We reiterate our belief that some dedicated funding mechanism via a fee structure where all stakeholders contribute is critical to any success of MassDEP assuming delegated authority over the NPDES program.

The Advisory Board expects to work closely with the MWRA and all stakeholders to help MassDEP assume NPDES delegation.

Outfall Monitoring Science Advisory Panel (OMSAP)

“Moving Forward: Not Just the MWRA’s Responsibility”

Since 1992, the MWRA has fully supported a comprehensive testing and monitoring program to gauge the impacts of discharges through the outfall pipe into Boston Harbor, during which time the MWRA ratepayers have paid over \$75 million. The monitoring program has confirmed that the outfall discharge from Boston Harbor into Massachusetts Bay does not have a negative environmental impact. Years of monitoring have demonstrated that:

- Flounder health, a marker of contamination prior to outfall opening, continues to be very good in recent years;
- Solids discharged to the Bay are less than 20 tons per day, compared to more than triple this amount in the 1990s;
- Phytoplankton communities remain normal with no large outfall-related blooms observed and dissolve oxygen levels are normal;
- There remains no evidence of adverse outfall impact in terms of nutrient, contaminant, and bacterial measures carried out as part of outfall monitoring;
- Effluent nitrogen levels have remained relatively steady, with larger proportion of ammonium compared to other nitrogen species, due to the nature of secondary treatment;
- Total nitrogen loads remain below the caution threshold of 12,000 tons per year, but do remain close to this threshold;
- PCB concentrations in the sediment remain low, with no samples within 2 kilometers of the outfall indicating possible toxicity;
- No Contingency Plan thresholds have been exceeded in the prior year, and relatively few exceedances have occurred over the last decade.

The Outfall Monitoring Science Advisory Panel (OMSAP) was established by EOEEA and US EPA to oversee and make recommendations on the monitoring plan. Many advocates want to see the monitoring plan evolve into a testing program for “emerging contaminants” in the Harbor and the Bay, and while that discussion is important, the solution should certainly not fall solely on the backs of the MWRA and its ratepayers. Discussion at the November 2018 OMSAP workshop arrived at the consensus that monitoring of emerging contaminants is not the sole responsibility of the MWRA.

There are 26 dischargers into Boston Harbor and Mass. Bay; some small, some larger. It is time for all dischargers, the Commonwealth of Massachusetts and all interested parties to fully participate in monitoring.

As the discussion moves forward, the MWRA must insure a revised plan includes:

- Full participation by all dischargers
- MWRA participation be limited to matched funds
- Ratepayers receive some benefit from reduced MWRA costs
- A “not-to-exceed” cap of overall MWRA financial participation

The Advisory Board expects that the MWRA will not make substantial changes to the monitoring program without other stakeholders also contributing to long-term testing.

How a Quasi Treats a Quasi

“Ratepayers Need to be Treated Fairly”

The Boston Harbor dredging project has been planned and approved to deepen the Harbor in order to allow larger ships (passenger and cargo ships) to access the City of Boston at the behest of the Mass. Port Authority (Massport), which will significantly increase the revenue that Massport generates from ships coming into Massachusetts.

The MWRA has once again been caught in the crosshairs as the electric cable that powers Deer Island runs under Boston Harbor and will need to be moved and replaced. Because the MWRA was named as a co-permittee on the cable (which is technically owned by Eversource), the MWRA is being forced to pay for the cable project that is being undertaken to allow the Boston Harbor dredging project to move forward.

The total cost to the MWRA to move the cable amounts to \$158.6 million over 30 years.

To add insult to injury, Eversource and Massport negotiated an \$8 million easement charge for the cable to cross a piece of Massport-owned land at Conley Terminal, despite the fact that the cable only needs to be removed and replaced right now to aid Massport in its mission to increase shipping traffic into Massachusetts, which benefits Massport, not the MWRA. This \$8 million charge costs the MWRA \$4 million in cash for capital (i.e. money up front) and then \$4 million paid to Eversource over 30 years with 9% interest.

So who is paying for the costs of dredging, which will undoubtedly lead to a boon in new revenue for Massport?

Federal Government Grants:	\$220 million
Massachusetts Bonds:	\$75 million
<u>Massport Investment:</u>	<u>\$55 million</u>
Total Cost of Dredging Harbor:	\$350 million

To date, the Advisory Board has requested public records of how Massport justifies charging \$8 million for an easement charge at Conley Terminal. Was there an appraisal done for that piece of land? It's unclear. The only response that the Advisory Board received from Massport was a copy of the Memorandum of Understanding between Massport and Eversource.

The Advisory Board recommends: (1) the MWRA officially request that Massport rescind their easement charges; (2) the MWRA request that the Legislature withhold final bond authorized payment for the dredging until resolved, and/or; (3) the MWRA jointly file a bill with the Advisory Board to add a surcharge on all tonnage to be assessed on all cargo and assess a per head charge for cruise ships until such time that the cable costs have been recovered.

The Advisory Board recommends: (1) the MWRA assess Massport for Operations and Maintenance (O&M) of the Wiggins Pump Station dating back to the inception of the MWRA which would be \$280,000 in inflation-adjusted dollars, and to begin charging Massport for O&M costs on a monthly basis moving forward, and (2) the MWRA remove the Wiggins Pump Station capital improvements project from its 5-year CIP until such time that an MOU is in place between the MWRA and Massport in which Massport agrees to pay for the design, construction and project management of the Wiggins Pump Station capital improvements.

Ratepayers are unfairly being impacted on all sides. Ratepayers get to pay higher federal taxes to cover federal grants of \$220 million. Ratepayers get to pay higher state taxes for the Commonwealth's bond costs of the \$75 million contribution. And lastly, ratepayers get to pay higher sewer bills to pay for the MWRA's share. Massport on the other hand, just makes more revenue.

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List of Recommendations

1. Therefore, the Advisory Board recommends reducing the FY20 Rate Revenue Requirement by \$4,327,312 resulting in a combined wholesale assessment increase of 3.15%
2. The Advisory Board recommends reducing the variable rate debt interest rate assumption to 3.50%, and the variable rate debt line item by \$1 million to reflect this change.
3. The Advisory Board recommends that the Authority continue explore the potential financial gains from using taxable bonds on appropriate capital projects, particularly when analyzing the funding structure of the HEEC cable replacement costs.
4. The Advisory Board recommends that the Authority adjusts its attrition/vacancy rate assumptions by \$950,000 (includes associated fringe benefits). Advisory Board also recommends a reduction of \$450,000 for fringe benefits based on GIC actual rates and enrollment and another \$250,000 for sick leave accrual.
5. The Advisory Board recommends that no payment be made towards the Commonwealth's new Paid Family and Medical Leave (M.G.L. Chapter 175M) the following steps have been taken: (1) Authority should sit with unions to determine if a private plan option is preferable, which may avoid the MWRA paying into a State system that does not benefit its employees but instead uses ratepayer dollars to subsidize other businesses in the Commonwealth. (2) Look at 3rd party administrators of a private plan option to determine the cost savings that may be available through opting out of the Commonwealth's program.
6. The Advisory Board recommends increasing the "additions to reserves" line item for FY20 by \$99,113 to correspond to the recommended reductions in eligible line items.
7. The Advisory Board recommends MWRA funding for the Watershed Division be reduced by a minimum of \$500,000 due to historically budgeted but unfilled positions. The Advisory Board also assumes that the Authority will use the staffing study, that was proposed by DCR in the Fall of 2018 and purported to be the basis of Watershed staffing needs, to adjust the FY20 Watershed Salaries & Wages.
8. The Advisory Board recommends that the Authority work toward a target of 2.4% rate increases by the year 2024.
9. The Advisory Board recommends: (1) the MWRA officially request that Massport rescind their easement charges; (2) the MWRA request that the Legislature withhold final bond authorized payment for the dredging until resolved, and/or; (3) the MWRA jointly file a bill with the Advisory Board to add a surcharge on all tonnage to be assessed on all cargo and assess a per head charge for cruise ships until such time that the cable costs have been recovered.
10. The Advisory Board recommends: (1) the MWRA assess Massport for Operations and Maintenance (O&M) of the Wiggins Pump Station dating back to the inception of the MWRA which would be \$280,000 in inflation-adjusted dollars, and to begin charging Massport for O&M costs on a monthly basis moving forward, and (2) the MWRA remove the Wiggins Pump Station capital improvements project from its 5-year CIP until such time that an MOU is in place between the MWRA and Massport in which Massport agrees to pay for the design, construction and project management of the Wiggins Pump Station capital improvements.

List of Comments

1. The Advisory Board expects that the Authority will be prepared to solicit any available new federal infrastructure funding for Metropolitan Tunnel Redundancy.
2. The Advisory Board supports the continued use of the defeasance account strategy, which clearly identifies a use of variable rate debt service savings that is consistent with the original intended use of the funds that were raised.
3. The Advisory Board expects the MWRA to increase the proposed Fringe Benefits line due to the Commonwealth's new Paid Family and Medical Leave (M.G.L. Chapter 175M) which begins on July 1, 2019.
4. The Advisory Board reiterates its recommendation that OPEB and Pension be treated as "two sides of the same coin" – any significant swings in the annual contribution to the Pension system related to maintaining "virtual full funding" should be offset with a reduction to the optional contributions to the OPEB Trust Fund.
5. The Advisory Board expects the MWRA to work with the Watershed Division and the Executive Office of Administration and Finance to insure that there is a seamless hiring process in the future, and not lose sight of the fact that the fundamental reason the Watershed Division operates outside of the Commonwealth's budget is to insulate them from the restraints of the Commonwealth's finances.
6. The Advisory Board expects the MWRA to decrease its "maintenance" category of expense by \$57,839 in the final FY20 CEB.
7. The Advisory Board expects the Authority will increase the "other services" category of expense by \$757,985 to account for an increase in residuals flows.
8. The Advisory Board expects the Authority to increase its FY20 CEB "utilities" expenses by an estimated \$255,664.
9. The Advisory Board expects that the MWRA will decrease the "chemicals" category of expense by \$276,308 to reflect updated pricing and usage assumptions.
10. The Advisory Board expects the MWRA to decrease of the "other materials" category of expense by \$319,461 in its final budget.
11. The Advisory Board thanks the MWRA staff for meeting the FY19 recommendation that TRAC fees should be updated with an automatic escalator to make fee increases sustainable and predictable for the permittees for FY20-24.
12. The Advisory Board expects to work closely with the MWRA and all stakeholders to help MassDEP assume NPDES delegation.
13. The Advisory Board expects that the MWRA will not make substantial changes to the monitoring program without other stakeholders also contributing to long-term testing.

Appendix C

IMPACTS ON RATE REVENUE REQUIREMENT		Amount
Final FY2019 RRR	\$	739,042,200
Proposed FY2020 RRR	\$	766,657,500
MWRA Proposed FY20 RRR Increase		3.74%
AB Recommendations	\$	(4,306,180)
FY2020 RRR, less changes	\$	762,351,321
Advisory Board Recommended FY20 RRR Increase		3.15%

IMPACTS ON EXPENDITURES	Amount	Description
MWRA ADVISORY BOARD RECOMMENDATIONS FOR FY20 CEB		
Staffing (vacancy rate assumptions)	\$ (950,000)	9.5 FTE, includes 2 less FTE than budgeted for Tunnel Redundancy
Leave Balance Accrual	\$ (250,000)	Reserve balance higher than necessary in FY19, impacts FY20
Fringe Benefits (Health Care Premiums)	\$ (450,000)	GIC rates lower than budgeted
Variable Rate Debt	\$ (1,000,000)	25 bp = \$1M (3.75% proposed; 3.50% now assumed)
Net of Defeasance, Refunding & Optional Debt	\$ (1,250,000)	Various tools for Authority to impact debt service in FY20
Debt Service Assistance	\$ (890,235)	Continuing Advisory Board recommendation to "pay it forward"
Indirect Costs - Watershed Staffing	\$ (500,000)	Based conservatively on actual FTE vacancies at DCR
Subtotal AB Recommendations	\$ (5,290,235)	
ANTICIPATED ADJUSTMENTS TO PROPOSED FY20 CEB		
Direct & Indirect Cost Changes		
Wages & Salaries	\$ 11,488	Stand By Pay at Clinton added in FY20
Advisory Board	\$ (10,000)	Advisory Board budget adjusted down due to staffing changes
Other Services	\$ 757,985	Residuals: sludge quantities increased from 100.89 tpd to 107.41 tpd
Other Materials	\$ (319,461)	Mainly due to fewer vehicle purchases based on need
Professional Services	\$ (29,238)	Adjustment to lab and testing as HVAC project was delayed
Fringe Benefits (PFML)	\$ 722,020	Paid Family Medical & Leave - projected costs of new program
Chemicals	\$ (276,308)	-\$124k usage Activated Carbon; -\$135k adjusted pricing Sodium Hypochlorite
Energy & Utilities	\$ 256,677	+\$364k for Electricity contract pricing; -\$110k for diesel fuel price reduction
Maintenance	\$ (57,838)	Mainly due to changing priorities at DITP
Subtotal of Changes to Operating Costs	\$ 1,055,325	
Revenue & Income		
Power Sales - Hydro and Solar	\$ (154,450)	
Load Reduction & Forward Capacity	\$ (15,932)	
Short Term Investment Income	\$ -	Authority took AB recommendation to increase ST assumption
Subtotal of Rate & Revenue	\$ (170,382)	
OPERATING RESERVE REQUIREMENT ADJUSTMENT		
Operating Reserve Requirement	\$ 99,113	Updated based on applicable adjustments; applies only to direct and indirect costs (revenue not included)
NET CHANGES TO PROPOSED FY20 CEB	\$ (4,306,180)	

Appendix D

	Total MWRA	FY19 Approved	FY20 Proposed	Change FY19 Proposed vs FY20 Approved Budget	
				\$	%
EXPENSES	Wages and Salaries	\$107,032,022	\$110,520,570	\$3,488,547	3.3%
	Overtime	\$4,447,554	\$4,898,965	451,411	10.1%
	Fringe Benefits	\$21,173,571	\$21,965,210	791,639	3.7%
	Workers' Compensation	\$2,422,609	\$2,354,256	(68,353)	-2.8%
	Chemicals	\$10,830,451	\$12,087,530	1,257,078	11.6%
	Energy and Utilities	\$22,868,632	\$24,199,102	1,330,470	5.8%
	Maintenance	\$32,258,727	\$32,784,792	526,065	1.6%
	Training and Meetings	\$455,770	\$504,394	48,624	10.7%
	Professional Services	\$7,675,976	\$8,324,491	648,515	8.4%
	Other Materials	\$7,381,099	\$7,186,700	(194,399)	-2.6%
	Other Services	\$23,065,410	\$23,925,385	859,975	3.7%
	TOTAL DIRECT EXPENSES	239,611,821	248,751,394	9,139,568	3.8%
	Insurance	2,099,064	2,081,406	(17,658)	-0.8%
	Watershed/PILOT	26,406,427	27,194,708	788,281	3.0%
	HEEC Payment	1,386,832	4,429,316	3,042,484	219.4%
	Mitigation	1,614,262	1,654,618	40,356	2.5%
	Addition to Reserves	1,881,797	2,086,626	204,829	10.9%
	Retirement Fund	7,000,000	7,315,000	315,000	4.5%
	OPEB/Additional Pension Contribution	5,574,152	5,962,457	388,305	7.0%
	TOTAL INDIRECT EXPENSES	45,962,534	50,724,130	4,761,597	10.4%
	Debt Service (before offsets)	482,369,358	497,555,848	15,186,490	3.1%
	Bond Redemption			-	
	Debt Service Assistance	873,804	0	-873,804	
TOTAL DEBT SERVICE	483,243,162	497,555,848	14,312,686	3.0%	
TOTAL EXPENSES	\$768,817,517	\$797,031,372	\$28,213,851	3.7%	
REVENUE AND INCOME	Rate Revenue	739,042,200	766,657,500	27,615,300	3.7%
	Other User Charges	3,180,373	9,239,263	6,058,890	190.5%
	Other Revenue	6,013,635	5,630,637	(382,998)	-6.4%
	Rate Stabilization	-	-	-	0.0%
	Investment Income	13,559,110	15,503,974	1,944,864	14.3%
	TOTAL REVENUE AND INCOME	761,795,318	\$797,031,374	\$35,236,056	4.6%

Appendix E

Cap Calculation versus Actual FY04-08 Spending

Final FY04 CIP	Baseline Cap FY04-08 (\$ millions)						
		FY04	FY05	FY06	FY07	FY08	Total FY04-08
	Projected Expenditures	\$237.0	\$190.2	\$195.2	\$217.3	\$183.6	\$1,023.3
	Contingency	19.4	14.1	15.5	19.8	18.1	86.9
	Inflation on Unawarded Construction	0.0	0.8	5.8	13.0	16.1	35.7
	Less: Chicopee Valley Aqueduct Projects	(5.4)	(1.5)	(1.4)	(0.1)	(3.0)	(11.4)
	FY04-08	\$250.9	\$203.5	\$215.2	\$250.1	\$214.8	\$1,134.5

FY08 Closeout Data	FY04-08 Actual Spending						
		FY04 Actual	FY05 Actual	FY06 Actual	FY07 Actual	FY08 Actual	Total FY04-08
	Projected Expenditures	\$194.0	\$167.7	\$152.3	\$177.7	\$196.8	\$888.5
	Contingency	0.0	0.0	0.0	0.0	0.0	0.0
	Inflation on Unawarded Construction	0.0	0.0	0.0	0.0	0.0	0.0
	Less: Chicopee Valley Aqueduct Projects	(0.4)	(0.5)	(2.4)	(3.3)	(1.8)	(8.4)
	FY04-08	\$193.6	\$167.2	\$149.9	\$174.4	\$195.0	\$880.1

Change	Baseline Cap FY04-08 to Actual Spending						
		FY04	FY05	FY06	FY07	FY08	Total FY04-08
	Projected Expenditures	(\$43.0)	(\$22.5)	(\$42.9)	(\$39.6)	\$13.2	(\$134.8)
	Contingency	(19.4)	(14.1)	(15.5)	(19.8)	(18.1)	(86.9)
	Inflation on Unawarded Construction	0.0	(0.8)	(5.8)	(13.0)	(16.1)	(35.7)
	Less: Chicopee Valley Aqueduct Projects	5.0	1.0	(1.0)	(3.2)	1.2	3.0
	FY04-08 CAP Δ (\$)	(\$57.4)	(\$36.4)	(\$65.2)	(\$75.6)	(\$19.8)	(\$254.4)
	FY04-08 CAP Δ (%)	-22.9%	-17.9%	-30.3%	-30.2%	-9.2%	-22.4%

Appendix E

Cap Calculation versus Actual FY09-13 Spending

Final FY09 CIP	Baseline Cap FY09-13 (\$ millions)						
		FY09	FY10	FY11	FY12	FY13	Total FY09-13
	Projected Expenditures	\$230.0	\$251.7	\$224.3	\$196.7	\$178.7	\$1,081.4
	Contingency	15.6	13.8	12.0	12.1	11.4	64.8
	Inflation on Unawarded Construction	0.0	0.5	2.8	7.8	11.3	22.4
	Less: Chicopee Valley Aqueduct Projects	(1.2)	(1.9)	(9.1)	(9.5)	(2.9)	(24.8)
	FY09-13 CAP	\$244.4	\$264.1	\$230.0	\$207.0	\$198.4	\$1,143.8

Proposed FY14 CIP	FY09-13 Actual Spending						
		FY09	FY10	FY11	FY12	FY13	Total FY09-13
	Projected Expenditures	\$182.2	\$211.4	\$139.3	\$137.6	\$161.9	\$832.4
	Contingency	0.0	0.0	0.0	0.0	0.0	\$0.0
	Inflation on Unawarded Construction	0.0	0.0	0.0	0.0	0.0	\$0.0
	Less: Chicopee Valley Aqueduct Projects	(0.6)	(0.5)	(0.9)	(0.1)	0.0	(\$2.1)
	Projected FY14-18	\$181.6	\$210.9	\$138.4	\$137.5	\$161.9	\$835.2

Change	Baseline Cap FY09-13 to Actual Spending						
		FY09	FY10	FY11	FY12	FY13	Total FY09-13
	Projected Expenditures	(\$47.8)	(\$40.2)	(\$85.0)	(\$59.1)	(\$16.8)	(\$248.9)
	Contingency	(15.6)	(13.8)	(12.0)	(4.9)	(1.7)	(48.0)
	Inflation on Unawarded Construction	0.0	(0.5)	(2.8)	(7.8)	(11.3)	(22.4)
	Less: Chicopee Valley Aqueduct Projects	0.6	1.4	8.3	9.4	1.2	20.9
	FY09-13 CAP Δ (\$)	(\$62.8)	(\$53.2)	(\$91.6)	(\$69.5)	(\$31.7)	(\$308.6)
	FY09-13 CAP Δ (%)	-25.7%	-20.1%	-39.8%	-33.6%	-16.0%	-27.0%

Appendix F

Program / Project / Contract	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY18	Remaining Balance	FY19	FY20	FY21	FY22	FY23	FY19-FY23 Expenditures	FY24-FY28 Expenditures
Total MWRA				8,151,873,364	4,273,762,304	3,878,111,061	174,333,281	249,801,950	258,700,059	218,756,210	182,332,747	1,083,924,249	1,578,394,290
Wastewater				3,700,571,273	2,061,317,110	1,639,254,164	82,761,348	169,696,888	161,382,659	138,482,031	124,732,035	677,054,961	855,910,165
Interception & Pumping				1,192,713,929	602,400,132	590,313,797	39,678,011	65,280,018	50,015,767	28,838,263	19,521,447	203,333,506	331,873,087
102 Quincy Pump Facilities Total		completed project		25,907,202	25,907,202	-							
104 Braintree-Weymouth Relief Total				240,104,663	227,704,621	12,400,041	173,764	417,034	417,034	417,034	417,034	1,841,900	10,558,140
105 New Neponset Valley Relief Total		completed project		30,300,304	30,300,304	-							
106 Wellesley Ext Replacement Total		completed project		64,358,543	64,358,543	-							
107 Framingham Extension Relie Total		completed project		47,855,986	47,855,986	-							
127 Cummingsville Replacement Total		completed project		8,998,768	8,998,768	-							
130 Siphon Structure Rehabilit Total				12,126,790	939,170	11,187,020	60,000	460,000	978,700	3,185,000	884,560	5,568,260	5,618,760
131 Upper Neponset Valley Sewe Total		completed project		54,174,077	54,174,077	-							
132 Corrosion & Odor Control Total				79,016,773	6,179,940	72,836,833	966,687	10,749,471	12,246,595	12,246,595	4,725,898	40,935,246	31,061,587
136 West Roxbury Tunnel Total				11,313,573	10,313,573	1,000,000							1,000,000
137 Wastewater Central Monitor Total				27,482,036	19,782,036	7,700,000			447,000	447,000	447,000	2,061,000	5,639,000
139 South System Relief Projec Total				4,939,244	3,439,244	1,500,000							1,500,000
141 Wastewater Process Optimiz Total				10,337,323	1,501,767	8,835,556							5,116,533
142 Wastewater Meter Sys-Equip Total				28,332,912	5,724,367	22,608,545	1,812,610	4,318,233	3,307,377	3,970,264	258,215	13,666,699	
143 Regional I/I Management PJ Total		completed project		168,987	168,987	-							
145 Facility Asset Protection Total				541,599,248	95,050,946	446,548,302	36,293,653	48,986,575	32,357,498	8,223,620	12,701,553	138,562,899	266,379,067
146 D.I. Cross Harbor Tunnel Total				5,000,000	-	5,000,000							5,000,000
147 Randolph Trunk Sewer Relie Total				697,500	-	697,500			261,563	348,750	87,187	697,500	
Treatment				1,037,227,592	301,156,788	736,070,805	12,129,232	66,418,532	80,566,870	80,726,953	77,317,529	317,159,115	371,902,273
182 DI Primary and Secondary T Total		completed project		(957,878)	(957,878)	-							
200 DI Plant Optimization Total		completed project		33,278,598	33,278,598	-							
206 DI Treatment PI Asset Prot Total				975,832,762	252,359,437	723,473,323	10,548,636	64,509,523	79,072,290	79,347,918	75,656,564	309,134,930	367,328,977
210 Clinton Wastewatr Treat PI Total				26,862,439	14,264,955	12,597,482	1,580,597	1,909,009	1,494,580	1,379,035	1,660,965	8,024,186	4,573,295
211 Laboratory Services Total		completed project		2,211,674	2,211,674	-							
Residuals				167,642,622	65,047,023	102,595,600	488,000	8,316,398	3,491,369	717,556	995,333	14,008,656	31,677,204
261 Residuals Total		completed project		63,810,848	63,810,848	-							
271 Residuals Asset Protection Total				103,831,775	1,236,175	102,595,600	488,000	8,316,398	3,491,369	717,556	995,333	14,008,656	31,677,204
CSO				910,121,268	902,996,415	7,724,853	1,417,746	3,982,027	2,325,064			7,724,837	
CSO MWRA Managed				433,534,309	433,534,309	-							
339 North Dorchester Bay Total		completed project		221,509,794	221,509,793	-							
347 East Boston Branch Sewer R Total		completed project		85,637,164	85,637,164	-							
348 BOS019 Storage Conduit Total		completed project		14,287,581	14,287,581	-							
349 Chelsea Trunk Sewer Total		completed project		29,779,319	29,779,320	-							
350 Union Park Detention Treat Total		completed project		49,583,407	49,583,407	-							
353 Upgrade Existing CSO Facil Total		completed project		22,385,200	22,385,200	-							
354 Hydraulic Relief Projects Total		completed project		2,294,549	2,294,549	-							
355 MWR003 Gate & Siphon Total		completed project		4,424,220	4,424,219	-							
357 Charles River CSO Controls Total		completed project		3,633,077	3,633,077	-							
CSO Community Managed				423,780,126	420,017,055	3,763,068		1,881,527	1,881,527			3,763,054	
340 Dorch Bay Sewer Sep (Fox) Total		completed project		55,028,985	55,028,985	-							
341 Dorch Bay Sew Separ (Comm Total				63,624,694	59,861,640	3,763,054		1,881,527	1,881,527			3,763,054	
342 Neponset River Sewer Separ Total		completed project		2,491,747	2,491,747	-							
343 Constitution Beach Sewer S Total		completed project		3,731,315	3,731,315	-							
344 Stony Brook Sewer Separati Total		completed project		44,319,314	44,319,314	-							
346 Cambridge Sewer Separation Total		completed project		104,552,056	104,552,054	-							
351 BWSC Floatables Controls Total		completed project		945,936	945,936	-							
352 Cambridge Floatables Contr Total		completed project		1,126,708	1,126,708	-							
356 Fort Point Channel Sewer S Total		completed project		11,507,257	11,507,256	-							
358 Morrissey Boulevard Drain Total		completed project		32,181,036	32,181,034	-							

Appendix F

Program / Project / Contract	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY18	Remaining Balance	FY19	FY20	FY21	FY22	FY23	FY19-FY23 Expenditures	FY24-FY28 Expenditures
359 Reserved Channel Sewer Sep Total		completed project		70,524,212	70,524,205	-							
360 Brookline Sewer Separation Total		completed project		24,715,291	24,715,291	-							
361 Bulfinch Triangle Sewer Se Total		completed project		9,031,576	9,031,575	-							
CSO Planning & Support				52,806,833	48,845,051	3,961,783	1,417,746	2,100,500	443,537			3,961,783	
324 CSO Support Total				52,806,833	48,845,051	3,961,783	1,417,746	2,100,500	443,537			3,961,783	
Other Wastewater				392,865,861	190,316,754	202,549,107	29,048,559	25,699,913	24,983,589	28,199,260	26,897,727	134,828,847	120,457,601
128 I/I Local Financial Assist Total				392,584,985	190,035,878	202,549,108	29,048,360	25,699,913	24,983,588	28,199,259	26,897,726	134,828,848	120,457,601
138 Sewerage System Mapping Up Total		completed project		280,876	280,876	-							
Waterworks				4,287,690,928	2,111,415,257	2,176,275,671	85,194,527	65,434,170	83,467,029	73,203,679	52,561,768	359,861,173	706,911,016
Drinking Water Quality Improve				704,555,418	649,972,373	54,583,044	1,755,219	3,112,000	3,574,810	3,399,000	1,346,000	13,187,029	13,125,000
542 Carroll Water Treatment Pl Total				436,157,452	423,116,424	13,041,027	1,473,218	2,082,000	235,810			3,791,028	9,250,000
543 Quabbin Water Treatment Pl Total		completed project		19,972,883	19,972,879	-							
544 Norumbega Covered Storage Total		completed project		106,674,147	106,674,146	-							
545 Blue Hills Covered Storage Total		completed project		40,082,837	40,082,837	-							
550 Spot Pond Storage Facility Total				60,127,101	60,126,087	1,014	1,000					1,000	
555 CWTP Asset Protection Total				41,541,000	-	41,541,000	281,000	1,030,000	3,339,000	3,399,000	1,346,000	9,395,000	3,875,000
Transmission				2,531,999,434	825,200,270	1,706,799,165	10,527,310	15,237,688	40,014,486	36,840,500	29,028,246	131,648,230	357,860,447
597 Winsor Station Pipeline Total				49,674,843	5,733,885	43,940,958	319,360					319,360	42,969,086
601 Sluice Gate Rehabilitation Total				9,158,411	9,158,411	-							
604 MetroWest Tunnel Total				700,184,181	697,182,356	3,001,826							3,001,822
615 Chicopee Valley Aqued. Red Total		completed project		8,666,292	8,666,291	-							
616 Quabbin Transmission Syst. Total				17,119,694	8,666,843	8,452,851	3,357		880,000	2,037,000	2,687,000	5,607,357	2,820,493
617 Sudbury/Weston Aqued. Rep Total				10,174,064	2,231,727	7,942,336	385,456	575,000	494,500			1,454,956	5,820,380
620 Wachusett Res Spillway Imp Total		completed project		9,287,460	9,287,460	-							
621 Watershed Land Total				29,000,000	22,846,400	6,153,600	845,000	905,000	1,000,000	1,000,000	1,000,000	4,750,000	1,403,600
622 Cosgrove Tunnel Redundancy Total				58,272,518	52,017,895	6,254,624	5,649,926	517,177	87,522			6,254,625	
623 Dam Projects Total				5,916,316	3,115,745	2,800,571		97,566	740,000	1,299,000	621,000	2,757,566	43,000
625 Metro Tunnel Redundancy Total				1,421,750,796	3,455,967	1,418,294,828	14,005	1,508,000	4,512,000	4,512,000	4,512,000	15,058,005	187,389,287
628 Metro Redu Interim Impr Total				192,894,859	2,837,289	190,057,571	3,310,206	11,277,945	29,914,464	25,125,500	18,808,246	88,436,361	101,522,779
630 Watershed Div Cap Impr Total				19,900,000	-	19,900,000		357,000	2,386,000	2,867,000	1,400,000	7,010,000	12,890,000
Distribution And Pumping				961,957,344	464,357,486	497,599,858	43,576,757	31,265,836	28,198,789	20,951,252	16,340,183	140,332,818	298,591,191
618 Peabody Pipeline Project Total				3,508,857	1,059,081	2,449,776	369,866		1,631,545	448,365		2,449,776	
677 Valve Replacement Total				21,654,809	12,016,378	9,638,431							6,487,202
678 Boston Low Serv.-Pipe & Va Total		completed project		23,690,863	23,690,863	-							
683 Heath Hill Road Pipe Repl. Total		completed project		19,358,036	19,358,036	-							
689 James L. Gillis Pump Strn. Total		completed project		33,419,007	33,419,008	-							
692 NHS - Section 27 Improvmt Total				1,325,638	123,646	1,201,992	713	1,238	750	12,150	12,150	27,001	1,174,992
693 NHS - Revere & Malden Pipe Total				79,527,069	28,561,307	50,965,762	815,095	2,062,797	1,111,617	902,000	1,147,057	6,038,566	43,029,195
702 New Connect Mains-Shaft 7 Total				54,124,444	12,974,613	41,199,831	1,322,437	7,121,552	7,326,115	2,869,395	4,077,000	22,716,499	18,483,331
704 Rehab of Other Pump Stns Total				50,257,852	30,057,852	20,200,000		180,000	240,000	244,167	656,667	1,320,834	18,879,166
706 NHS-Conn Mains Section 91 Total		completed project		2,360,194	2,360,194	-							
708 Nor Ext High Serv New Pipe Total				10,874,080	3,632,119	7,241,962	9,996	12,699	1,950	107,488	315,000	447,133	6,794,828
712 Catholic Pro Of Dis Mains Total				66,704,129	269,629	66,434,500	500,000	579,500	1,481,860	3,284,000	5,121,250	10,966,610	55,467,890
713 Spot Pond Supply Mains Reh Total				66,332,804	65,489,309	843,495	43,495			600,000	200,000	843,495	

Appendix F

Program / Project / Contract	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY18	Remaining Balance	FY19	FY20	FY21	FY22	FY23	FY19-FY23 Expenditures	FY24-FY28 Expenditures
714 South. Extra High Sects 41 Total		completed project		3,657,244	3,657,244	-							
719 Chestnut Hill Connec Mains Total				33,826,925	18,286,518	15,540,407							15,534,407
720 Warren Cottage Line Rehab Total		completed project		1,204,821	1,204,821	-							
721 South Spine Distrib Mains Total				78,707,735	36,683,102	42,024,633	52,191	624,381	624,381	360,596	508,449	2,169,998	39,745,884
722 NIH Redundancy & Storage Total				120,365,537	48,895,156	71,470,381	17,726,896	6,622,623	12,020,515	7,623,625	250,000	44,243,659	27,215,264
723 Nor Low Service Rehab Sec8 Total				56,684,417	2,954,614	53,729,803	1,974,926	1,639,107	1,311,600	3,737,266	3,289,600	11,952,499	40,980,812
725 Hydraulic Model Update Total		completed project		598,358	598,358	-							
727 SEH Redundancy & Storage Total				131,416,153	28,444,813	102,971,341	20,700,426	12,418,690	2,447,331	461,075	363,000	36,390,522	13,876,902
730 Weston Aqued. Supply Mains Total				80,463,696	80,402,977	60,718	60,718					60,718	
731 Lynnfield Pipeline Total		completed project		5,625,829	5,625,828	-							
732 Walnut St. & Fisher Hill P Total		completed project		2,717,141	2,717,141	-							
735 Section 80 Rehabilitation Total				13,551,712	1,924,884			3,250	1,125	301,125	400,010	705,510	10,921,318
Other Waterworks				89,178,732	171,885,128	(82,706,396)	29,335,241	15,818,646	11,678,944	12,012,927	5,847,339	74,693,097	37,334,379
753 Central Monitoring System Total				39,017,211	20,704,576	18,312,635	416,277	975,000	3,950,000	2,700,000	1,625,000	9,666,277	5,576,000
763 Distribut Systems Fac. Map Total				2,798,919	1,036,368	1,762,551		269,000	577,000	337,000	366,000	1,549,000	213,551
764 Local Water Infrastr Rehab Total		completed project		7,487,762	7,487,762	-							
765 Local Water Pipeline Imp. Total				-	140,273,212	(140,273,211)	22,399,751	9,697,681	5,186,304	4,421,927	(4,207,815)	37,497,848	20,033,168
766 Waterworks Facility Asset Total				39,874,841	2,383,210	37,491,631	6,519,213	4,876,965	1,965,639	4,554,000	8,064,154	25,979,971	11,511,660
Business & Operations Support				163,611,163	101,029,937	62,581,226	6,377,407	14,670,892	13,850,372	7,070,500	5,038,944	47,008,114	15,573,109
881 Equipment Purchase Total				38,706,221	21,856,910	16,849,311	2,038,809	1,743,000	1,432,500	1,772,500	3,082,500	10,069,309	6,780,000
925 Technical Assistance Total				1,100,000	-	1,100,000		366,000		368,000		1,100,000	
930 MWRA Facility - Chelsea Total		completed project		9,812,071	9,812,071	-							
931 Business Systems Plan Total		completed project		24,562,604	24,562,604	-							
932 Environmental Remediation Total		completed project		1,478,602	1,478,602								
933 Capital Maintenance Planni Total				28,161,817	14,200,662	13,961,155	3,240,142	3,437,000	3,596,014	2,888,000	800,000	13,961,156	
934 MWRA Facilities Management Total				2,870,535	370,533	2,500,002		300,000	1,276,000	924,000		2,500,000	
935 Alternative Energy Initiat Total				23,598,121	18,417,564	5,180,556							5,180,552
940 Applicat Improv Program Total				11,412,732	2,892,130	8,520,602	679,252	1,733,228	1,063,125	600,000	984,444	5,060,049	3,460,557
942 Info Security Program ISP Total				5,506,323	1,707,905	3,798,418	47,205	1,087,342	2,663,871			3,798,418	
944 Info Tech Mgmt Program Total				200,000	-	200,000	200,000					200,000	
946 IT Infrastructure Program Total				16,202,138	5,730,957	10,471,181	172,000	6,004,321	3,452,862	518,000	172,000	10,319,183	152,000

Appendix G

Program and Project	FY19 Final			FY20 Proposed			Change from Final FY19		
	Total Budget Amount	FY14 18	FY19-23	Total Budget Amount	FY14 18	FY19-23	Total Budget Amount	FY14 18	Beyond 23
Total MWRA	8,009,088	595,622	1,051,829	8,151,875	595,638	1,083,923	142,037	(9,984)	124,583
Wastewater	3,603,553	334,086	643,200	3,700,573	325,315	677,055	97,020	(8,771)	71,936
Interception & Pumping	1,115,506	83,504	188,703	1,192,715	81,861	203,334	77,209	(1,643)	64,222
102 Quincy Pump Facilities	25,907	-	-	25,907	-	-	-	-	-
104 Braintree-Weymouth Relief Facilities	239,378	1	1,814	240,105	1	1,842	727	-	699
105 New Neponset Valley Relief Sewer	30,300	-	-	30,300	-	-	-	-	-
106 Wellesley Extension Replacement Sewer	64,359	-	-	64,359	-	-	-	-	-
107 Framingham Extension Relief Sewer	47,856	-	-	47,856	-	-	-	-	-
127 Cummingsville Replacement Sewer	8,999	-	-	8,999	-	-	-	-	-
130 Siphon Structure Rehabilitation	6,168	-	5,228	12,127	-	5,568	5,959	-	5,619
131 Upper Neponset Valley Sewer	54,174	-	-	54,174	-	-	-	-	-
132 Corrosion & Odor Control	76,754	2,947	41,502	79,017	3,179	40,935	2,263	232	2,598
136 West Roxbury Tunnel	11,314	-	-	11,314	-	-	-	-	-
137 Wastewater Central Monitoring	27,482	-	2,200	27,482	-	2,061	-	-	139
139 South System Relief Project	4,939	-	-	4,939	-	-	-	-	-
141 Wastewater Process Optimization	10,306	297	-	10,337	297	-	31	-	32
142 Wastewater Meter System-Equipment	28,733	974	13,679	28,333	586	13,667	(400)	(388)	-
143 Regional I/I Management Planning	169	-	-	169	-	-	-	-	-
145 Facility Asset Protection	472,970	79,285	123,582	541,599	77,798	138,563	68,629	(1,487)	55,135
146 D.I. Cross Harbor Tunnel Inspection	5,000	-	-	5,000	-	-	-	-	-
147 Randolph Trunk Sewer Relief	698	-	698	698	-	698	-	-	-
Treatment	1,017,420	117,772	312,076	1,037,228	116,434	317,159	19,808	(1,338)	16,062
182 D1 Primary and Secondary	(958)	-	-	(958)	-	-	-	-	-
200 D1 Plant Optimization	33,279	(148)	-	33,279	(148)	-	-	-	-
206 D1 Treatment Plant Asset Protection	956,523	105,912	305,312	975,833	104,859	309,135	19,310	(1,053)	16,540
210 Clinton Wastewater Treat Plant	26,364	12,024	6,764	26,862	11,739	8,024	498	(285)	(478)
211 Laboratory Services	2,212	(16)	-	2,212	(16)	-	-	-	-
Residuals	167,643	675	11,487	167,643	511	14,009	-	(164)	(2,358)
261 Residuals	63,811	-	-	63,811	-	-	-	-	-
271 Residuals Asset Protection	103,832	675	11,487	103,832	511	14,009	-	(164)	(2,358)

Appendix G

Program and Project	FY19 Final				FY20 Proposed				Change from Final FY19			
	Total Budget Amount	FY14-18	FY19-23	Beyond 23	Total Budget Amount	FY14-18	FY19-23	Beyond 23	Total Budget Amount	FY14-18	FY19-23	Beyond 23
CSO	910,118	64,699	7,711	-	910,121	64,688	7,724	-	910,121	64,688	7,724	-
	55,029	877	-	-	55,029	877	-	-	55,029	877	-	-
340 Dorchester Bay Sewer Separation (Fox Point)	63,619	(1,286)	3,758	-	63,625	(1,286)	3,763	-	63,625	(1,286)	3,763	-
341 Dorchester Bay Sewer Separation (Commercial Point)	2,492	47	-	-	2,492	47	-	-	2,492	47	-	-
342 Neponset River Sewer Separation	3,731	(38)	-	-	3,731	(38)	-	-	3,731	(38)	-	-
343 Constitution Beach Sewer Separation	44,319	121	-	-	44,319	121	-	-	44,319	121	-	-
344 Stony Brook Sewer Separation	104,552	54,068	-	-	104,552	54,068	-	-	104,552	54,068	-	-
346 Cambridge Sewer Separation	946	13	-	-	946	13	-	-	946	13	-	-
351 BWSC Floatables Controls	1,127	40	-	-	1,127	40	-	-	1,127	40	-	-
352 Cambridge Floatables Control	11,507	(499)	-	-	11,507	(499)	-	-	11,507	(499)	-	-
356 Fort Point Channel Sewer Separation	32,181	(166)	-	-	32,181	(166)	-	-	32,181	(166)	-	-
358 Morrissey Boulevard Drain	70,524	10,484	-	-	70,524	10,484	-	-	70,524	10,484	-	-
359 Reserved Channel Sewer Separation	24,715	(1,282)	-	-	24,715	(1,282)	-	-	24,715	(1,282)	-	-
360 Brookline Sewer Separation	9,032	(826)	-	-	9,032	(826)	-	-	9,032	(826)	-	-
361 Bulfinch Triangle Sewer Separation	221,510	(111)	-	-	221,510	(111)	-	-	221,510	(111)	-	-
339 North Dorchester Bay	85,637	(9)	-	-	85,637	(9)	-	-	85,637	(9)	-	-
347 East Boston Branch Sewer Relief	14,288	-	-	-	14,288	-	-	-	14,288	-	-	-
348 BOS019 Storage Conduit	29,779	-	-	-	29,779	-	-	-	29,779	-	-	-
349 Chelsea Trunk Sewer	49,583	-	-	-	49,583	-	-	-	49,583	-	-	-
350 Union Park Detention Treatment Facility	22,385	-	-	-	22,385	-	-	-	22,385	-	-	-
353 Upgrade Existing CSO Facilities	2,295	-	-	-	2,295	-	-	-	2,295	-	-	-
354 Hydraulic Relief Projects	4,424	3,775	-	-	4,424	3,775	-	-	4,424	3,775	-	-
355 MWR003 Gate & Siphon	3,633	-	-	-	3,633	-	-	-	3,633	-	-	-
357 Charles River CSO Controls	52,810	(508)	3,954	-	52,807	(519)	3,962	-	52,807	(519)	3,962	-
324 CSO Support												
Other Wastewater	392,866	67,436	123,223	73,711	392,866	61,821	134,829	67,721	392,866	61,821	134,829	67,721
128 L/I Local Financial Assistance	392,585	67,436	123,223	73,711	392,585	61,821	134,829	67,721	392,585	61,821	134,829	67,721
138 Sewerage System Mapping Upgrade	281	-	-	-	281	-	-	-	281	-	-	-
Total Waterworks	4,253,659	237,374	370,062	1,771,547	4,287,692	236,734	359,865	1,816,417	4,287,692	236,734	359,865	1,816,417
Drinking Water Quality	703,468	54,845	8,115	45,300	704,555	54,765	13,187	41,396	704,555	54,765	13,187	41,396
542 Carroll Water Treatment Plant	435,675	11,842	3,374	9,250	436,157	11,908	3,791	9,250	436,157	11,908	3,791	9,250
543 Quabbin Water Treatment Plant	19,973	7,205	-	-	19,973	7,205	-	-	19,973	7,205	-	-
544 Norumbega Covered Storage	106,674	-	-	-	106,674	-	-	-	106,674	-	-	-
545 Blue Hills Covered Storage	40,083	120	-	-	40,083	120	-	-	40,083	120	-	-
550 Spot Pond Storage Facility	60,272	35,678	-	-	60,127	35,532	1	-	60,127	35,532	1	-
555 CWTP Asset Protection	40791	0	4741	36050	41,541	-	9,395	32,146	41,541	-	9,395	32,146

Appendix G

Program and Project	FY19 Final			FY20 Proposed				Change from Final FY19				
	Total Budget Amount	FY14-18	FY19-23	Beyond 23	Total Budget Amount	FY14-18	FY19-23	Beyond 23	Total Budget Amount	FY14-18	FY19-23	Beyond 23
Transmission	2,494,174	70,511	129,441	1,539,191	2,532,001	70,164	131,650	1,575,153	37,827	(347)	2,209	35,962
597 Winsor Station Pipeline												
601 Sluice Gate Rehabilitation	48,640	4,505	149	42,591	49,675	4,338	319	43,622	1,035	(167)	170	1,031
604 MetroWest Tunnel	700,184	1,784	-	3,002	700,184	1,784	-	3,002	-	-	-	-
615 Chicopee Valley Aqueduct Redundancy	8,666	-	-	-	8,666	-	-	-	-	-	-	-
616 Quabbin Transmission System	17,120	1,464	1,865	6,588	17,120	1,464	5,607	2,845	-	-	3,742	(3,743)
617 Sudbury/Weston Aqueduct Repairs	10,288	2,069	1,085	6,475	10,174	1,572	1,455	6,487	(114)	(497)	370	12
620 Wachusett Reservoir Spillway Improvement	9,287	-	-	-	9,287	-	-	-	-	-	-	-
621 Watershed Land	29,000	5,254	5,000	1,404	29,000	5,504	4,750	1,404	-	250	(250)	-
622 Cosgrove/Wachusett Redundancy	57,495	50,746	5,574	-	58,273	50,842	6,255	-	778	96	681	-
623 Dam Projects	5,726	31	2,392	218	5,916	31	2,758	43	190	-	366	(175)
625 Metro Tunnel Redundancy	1,387,910	1,790	14,483	1,369,970	1,421,751	1,790	15,058	1,403,237	33,841	-	575	33,267
628 Metro Redundancy Interim Improvement	192,698	2,566	94,081	96,051	192,895	2,837	88,436	101,621	197	271	(5,645)	5,570
630 Watershed Division Capital Improvement	18,000	300	4,810	12,890	19,900	-	7,010	12,890	1,900	(300)	2,200	-
Distribution & Pumping	965,831	90,418	159,644	343,064	961,957	91,654	140,335	357,265	(3,874)	1,236	(19,309)	14,201
618 Peabody Pipeline	18,668	1,163	17,504	-	3,509	1,059	2,450	-	(15,159)	(104)	(15,054)	-
677 Valve Replacement	21,402	-	-	9,385	21,655	-	-	9,638	253	-	-	253
678 Boston Low Service-Pipe & Valve Rehabilitation	23,691	-	-	-	23,691	-	-	-	-	-	-	-
683 Heath Hill Road Pipe Replacement	19,358	-	-	-	19,358	-	-	-	-	-	-	-
689 James L. Gillis Pump Station Rehabilitation	33,419	-	-	-	33,419	-	-	-	-	-	-	-
692 NHS - Section 27 Improvements	1,294	-	27	1,143	1,326	-	27	1,175	32	-	-	32
693 NHS - Revere & Malden Pipeline Improvement	79,095	1,572	7,618	43,072	79,527	1,729	6,039	44,927	432	157	(1,579)	1,855
702 New Connect Mains-Shaft 7 to WASM 3	48,567	1,929	20,707	14,970	54,124	1,964	22,716	18,483	5,557	35	2,009	3,513
704 Rehabilitation of Other Pump Stations	50,258	-	1,321	18,879	50,258	-	1,321	18,879	-	-	-	-
706 NHS-Connecting Mains from Section 91	2,360	-	-	-	2,360	-	-	-	-	-	-	-
708 Northern Extra High Service New Pipelines	10,685	13	402	6,638	10,874	-	447	6,795	189	(13)	45	157
712 Catholic Protection Of Distribution Mains	62,716	129	11,531	50,915	66,704	129	10,967	55,468	3,988	-	(564)	4,553
713 Spot Pond Supply Mains Rehabilitation	66,333	4,551	800	-	66,333	4,507	843	-	-	(44)	43	-
714 Southern Extra High Sections 41 & 42	3,657	-	-	-	3,657	-	-	-	-	-	-	-
719 Chestnut Hill Connecting Mains	33,435	816	-	15,132	33,827	800	-	15,540	392	(16)	-	408
720 Warren Cottage Line Rehabilitation	1,205	-	-	-	1,205	-	-	-	-	-	-	-
721 South Spine Distribution Mains	77,401	(9)	1,890	38,828	78,708	(9)	2,170	39,855	1,307	-	280	1,027
722 NHI Redundancy & Storage	118,494	41,927	42,080	28,512	120,366	42,921	44,244	27,226	1,872	994	2,164	(1,286)
723 Northern Low Service Rehabilitation Section 8	62,366	829	18,269	40,947	56,684	634	11,952	41,777	(5,682)	(195)	(6,317)	830
724 Northern High Service - Pipeline Rehabilitation	-	-	-	-	-	-	-	-	-	-	-	-
725 Hydraulic Model Update	598	-	-	-	598	-	-	-	-	-	-	-
727 Southern Extra High Redundancy & Storage	129,604	21,206	36,806	64,836	131,416	21,688	36,391	66,581	1,812	482	(415)	1,745
730 Western Aqueduct Supply Mains	80,464	14,420	-	-	80,464	14,360	61	-	(60)	61	-	-
731 Lynnfield Pipeline	5,626	(52)	-	-	5,626	(52)	-	-	-	-	-	-
732 Walnut St. & Fisher Hill Pipeline Rehabilitation	2,717	-	-	-	2,717	-	-	-	-	-	-	-

Appendix G

Program and Project	FY19 Final			FY20 Proposed				Change from Final FY19				
	Total Budget Amount	FY14-18	FY19-23	Beyond 23	Total Budget Amount	FY14-18	FY19-23	Beyond 23	Total Budget Amount	FY14-18	FY19-23	Beyond 23
733 NHS Pipeline Rehabilitation 13-18 & 48	-	-	-	-	-	-	-	-	-	-	-	-
734 Southern Extra High Pipelines-Sections 30, 39-40, & 44	-	-	-	-	-	-	-	-	-	-	-	-
735 Section 80 Rehabilitation	12,419	1,925	688	9,807	13,552	1,925	706	10,921	1,133	-	18	1,114
Other	90,186	21,600	72,862	(156,010)	89,179	20,151	74,693	(157,399)	(1,007)	(1,449)	1,831	(1,389)
753 Central Monitoring System	39,017	5,061	9,600	8,552	39,017	4,901	9,666	8,646	-	(160)	66	94
763 Distribution Systems Facilities Mapping	2,799	-	1,663	100	2,799	-	1,549	214	-	-	(114)	114
764 Local Water Infrastructure Remediation Assistance	7,488	-	-	-	7,488	-	-	-	-	-	-	-
765 Local Water Pipeline Improvement Loan Program	-	14,654	32,408	(173,921)	-	13,414	37,498	(177,771)	-	(1,240)	5,090	(3,850)
766 Waterworks Facility Asset Protection	40,882	1,886	29,191	9,259	39,875	1,837	25,980	11,512	(1,007)	(49)	(3,211)	2,253
Business & Operations Support	151,876	24,160	38,572	11,701	163,610	23,587	47,008	15,574	11,734	(573)	8,436	3,873
881 Equipment Purchase	33,825	9,796	9,391	2,530	38,706	9,750	10,069	6,780	4,881	(46)	678	4,250
925 Technical Assistance	1,100	26	1,074	-	1,100	-	1,100	-	-	(26)	26	-
930 MWRA Facility - Chelsea	9,812	(2)	-	-	9,812	(2)	-	-	-	-	-	-
931 Business Systems Plan	24,563	111	-	-	24,563	111	-	-	-	-	-	-
932 Environmental Remediation	1,479	-	-	-	1,479	-	-	-	-	-	-	-
933 Capital Maintenance Planning	23,157	4,513	8,519	-	28,162	4,076	13,961	-	5,005	(437)	5,442	-
934 MWRA Facilities Management	2,151	-	1,780	-	2,871	-	2,500	-	720	-	720	-
935 Alternative Energy Initiatives	23,476	1,221	-	5,058	23,598	1,221	-	5,181	122	-	-	123
940 Applicat Improv Program	12,198	2,828	5,337	3,961	11,413	2,819	5,060	3,461	(785)	(9)	(277)	(500)
942 Info Security Program ISP	3,727	1,146	2,045	-	5,506	1,173	3,798	-	1,779	27	1,753	-
944 Info Tech Mgmt Program	636	-	636	-	200	-	200	-	(436)	-	(436)	-
946 IT Infrastructure Program	15,754	4,522	9,789	152	16,202	4,440	10,319	152	448	(82)	530	-

Appendix H

Program	Project	Subphase	Contract Number	Total Contract Amount	NTP	SC	FY19	FY20	FY21	FY22	FY23	FY19-23	Beyond FY23	Total Expenditures
Interception & Pumping	Facility Asset Protection	Section 191 & 192 Charles River Valley Sewer	7643	\$ 500,000	May-19	Oct-19		\$ 500,000				\$ 500,000	\$ -	\$ 500,000
Interception & Pumping	Facility Asset Protection	Pump Stations & CSO Facility Rehab Design CA/REI	7689	\$ 7,500,000	Nov-21	Nov-31				\$ 150,000	\$ 500,000	\$ 650,000	\$ 6,850,000	\$ 7,500,000
Interception & Pumping	Facility Asset Protection	Pump Stations & CSO Facility Rehab Construction	7688	\$ 37,500,000	Nov-23	Nov-30						\$ -	\$ 37,500,000	\$ 37,500,000
Treatment	DITP Asset Protection	As-Needed REI	7647	\$ 3,000,000	Jul-19	Jul-21		\$ 731,250	\$ 1,275,000	\$ 993,750		\$ 3,000,000		\$ 3,000,000
Treatment	Clinton Wastewater Treatment Plant	Equipment & Supplies Storage Building	7693	\$ 292,589	Sep-19	Dec-20		\$ 157,009	\$ 135,580			\$ 292,589		\$ 292,589
Drinking Water Quality Improvements	Carroll Water Treatment Asset Protection	CWTP Emergency Generator #1 Replacement (Electric Portion)	7642	\$ 750,000	Jan-19	Aug-19	281,000	\$469,000				\$ 750,000		\$ 750,000
Business & Operations Support	Capital Maintenance Planning & Support	As-Needed Design Contract 18	7691	\$ 2,500,000	Jul-20	Jul-22			900,000	1,200,000	400,000	\$ 2,500,000		\$ 2,500,000
Business & Operations Support	Capital Maintenance Planning & Support	As-Needed Design Contract 19	7692	\$ 2,500,000	Jul-20	Jul-22			900,000	1,200,000	400,000	\$ 2,500,000		\$ 2,500,000
SUMMARY:														
Total Wastewater Projects				\$ 48,792,589			\$ -	\$ 1,388,259	\$ 1,410,580	\$ 1,143,750	\$ 500,000	\$ 4,442,589	\$ 44,350,000	\$ 48,792,589
Total Waterworks Projects				\$ 750,000			\$ 281,000	\$ 469,000	\$ -	\$ -	\$ -	\$ 750,000	\$ -	\$ 750,000
Business & Operations Support				\$ 5,000,000			\$ -	\$ -	\$ 1,800,000	\$ 2,400,000	\$ 800,000	\$ 5,000,000	\$ -	\$ 5,000,000
Total Projects				\$ 54,542,589			\$ 281,000	\$ 1,857,259	\$ 3,210,580	\$ 3,543,750	\$ 1,300,000	\$ 10,192,589	\$ 44,350,000	\$ 54,542,589

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Wachusett Watershed – Barbara Wyatt
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Richard Palmer
Connecticut River Basin –
Andrew Chalker Fisk
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*Moe Handel**

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Andrew Pappastergion - Brookline
Joseph Foti - Chelsea

*Member of the Executive Committee

** Chairman of the Executive Committee